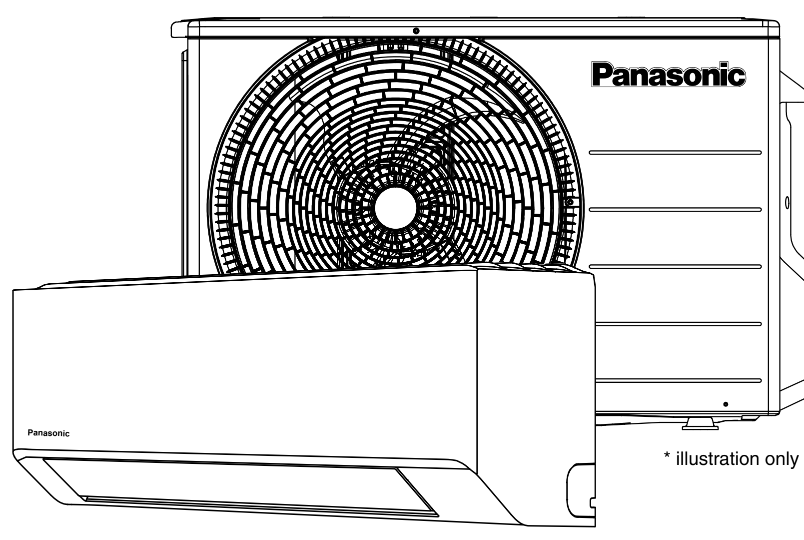
Panasonic

ACXF60-57250

Installation Instruction

Air conditioner



* illustration only

MODEL NO : CS/CU-YU9*** (1.0HP)
CS/CU-YU12*** (1.5HP)

⚠ CAUTION

R32

REFRIGERANT

This Air Conditioner contains and operates with refrigerant R32.

THIS PRODUCT MUST ONLY BE INSTALLED OR SERVICED BY QUALIFIED PERSONNEL.

Refer to National, State, Territory and local legislation, regulations, codes, installation & operation manuals, before the installation, maintenance and/or service of this product.

Explanation of symbols displayed on the indoor unit or outdoor unit.

⚠	WARNING	This symbol shows that this equipment uses a mildly flammable refrigerant. If the refrigerant is leaked, together with an external ignition source, there is a possibility of ignition.
📖	CAUTION	This symbol shows that the Installation Manual should be read carefully.
🔧	CAUTION	This symbol shows that a service personnel should be handling this equipment with reference to the Installation Manual.
ℹ	CAUTION	This symbol shows that there is information included in the Operation Manual and/or Installation Manual.

Panasonic will not be responsible for any incident or damage due to improper installation in anyway not described in the detailed manuals. Malfunction caused by incorrect installation is also not covered in product warranty.

SAFETY PRECAUTIONS

- Read the following "SAFETY PRECAUTIONS" carefully before installation.
- Electrical work must be installed by a licensed electrician. Be sure to use the correct rating of the power plug and main circuit for the model to be installed.
- The caution items stated here must be followed because these important contents are related to safety. The meaning of each indication used is as below. Incorrect installation due to ignoring of the instruction will cause harm or damage, and the seriousness is classified by the following indications.

⚠ WARNING	This indication shows the possibility of causing death or serious injury.
⚠ CAUTION	This indication shows the possibility of causing injury or damage to properties only.

The items to be followed are classified by symbols:	⃠	Symbol with white background denotes item that is PROHIBITED.
	❗ ⏚	Symbol with dark background denotes item that must be carried out.

- Carry out test running to confirm that no abnormality occurs after the installation. Then, explain to user the operation, care and maintenance as stated in instructions. Please remind the customer to keep the operating instructions for future reference.

If the equipment is transferred to a new user or delivered to a recycling plant, be sure also to hand over the manual.

⚠ WARNING

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. Any unfit method or using incompatible material may cause product damage, burst and serious injury.
- Do not install outdoor unit near handrail of veranda. When installing air-conditioner unit on veranda of a high rise building, child may climb up to outdoor unit and cross over the handrail causing an accident.
- Do not use unspecified cord, modified cord, joint cord or extension cord for power supply cord. Do not share the single outlet with other electrical appliances. Poor contact, poor insulation or over current will cause electrical shock or fire.
- Do not tie up the power supply cord into a bundle by band. Abnormal temperature rise on power supply cord may happen.
- Do not insert your fingers or other objects into the unit, high speed rotating fan may cause injury.
- Do not sit or step on the unit, you may fall down accidentally.
- Keep plastic bag (packaging material) away from small children, it may cling to nose and mouth and prevent breathing.
- When installing or relocating air conditioner, do not let any substance other than the specified refrigerant, eg. air etc mix into refrigeration cycle (piping). Mixing of air etc. will cause abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- Do not pierce or burn as the appliance is pressurized. Do not expose the appliance to heat, flame, sparks, or other sources of ignition. Else, it may explode and cause injury or death.
- Do not add or replace refrigerant other than specified type. It may cause product damage, burst and injury etc.

- For R32/R410A model, use piping, flare nut and tools which is specified for R32/R410A refrigerant. Using of existing (R22) piping, flare nut and tools may cause abnormally high pressure in the refrigerant cycle (piping), and possibly result in explosion and injury.
  For R32 and R410A, the same flare nut on the outdoor unit side and pipe can be used.
- Since the working pressure for R32/R410A is higher than that of refrigerant R22 model, replacing conventional piping and flare nuts on the outdoor unit side are recommended.
- If reuse piping is unavoidable, refer to instruction "IN CASE OF REUSING EXISTING REFRIGERANT PIPING"
- Thickness of copper pipes used with R32/R410A must be more than 0.8 mm. Never use copper pipes thinner than 0.8 mm.
- It is desirable that the amount of residual oil less than 40 mg/10 m.
- Engage authorized dealer or specialist for installation. If installation done by the user is incorrect, it will cause water leakage, electrical shock or fire.
- For refrigeration system work, install according to this installation instructions strictly. If installation is defective, it will cause water leakage, electrical shock or fire.
- Use the attached accessories parts and specified parts for installation. Otherwise, it will cause the set to fall, water leakage, fire or electrical shock.
- Install at a strong and firm location which is able to withstand weight of the set. If the strength is not enough or installation is not properly done, the set will drop and cause injury.
- For electrical work, follow the national regulation, legislation and this installation instructions. An independent circuit and single outlet must be used. If electrical circuit capacity is not enough or defect found in the electrical work, it will cause electrical shock or fire.
- Do not use joint cable for indoor / outdoor connection cable. Use the specified indoor/outdoor connection cable, refer to instruction ⑤ **CONNECT THE CABLE TO THE INDOOR UNIT** and connect tightly for indoor/outdoor connection. Clamp the cable so that no external force will have impact on the terminal. If connection or fixing is not perfect, it will cause heat up or fire at the connection.
- Wire routing must be properly arranged so that control board cover is fixed properly. If control board cover is not fixed perfectly, it will cause fire or electrical shock.
- This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD), with sensitivity of 30 mA at 0.1 sec or less. Otherwise, it may cause electrical shock and fire in case of equipment breakdown or insulation breakdown.
- During installation, install the refrigerant piping properly before running the compressor. Operation of compressor without fixing refrigeration piping and valves at opened position will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- During pump down operation, stop the compressor before removing the refrigeration piping. Removal of refrigeration piping while compressor is operating and valves are opened will cause suck-in of air, abnormal high pressure in refrigeration cycle and result in explosion, injury etc.
- Tighten the flare nut with torque wrench according to specified method. If the flare nut is over-tightened, after a long period, the flare may break and cause refrigerant gas leakage.
- After completion of installation, confirm there is no leakage of refrigerant gas. It may generate toxic gas when the refrigerant contacts with fire.
- Ventilate if there is refrigerant gas leakage during operation. It may cause toxic gas when the refrigerant contacts with fire.
- Be aware that refrigerants may not contain an odour.

- This equipment must be properly earthed. Earth line must not be connected to gas pipe, water pipe, earth of lightning rod and telephone. Otherwise, it may cause electrical shock in case of equipment breakdown or insulation breakdown.

⚠ CAUTION

- Do not install the unit in a place where leakage of flammable gas may occur. In case gas leaks and accumulates at surrounding of the unit, it may cause fire.
- Prevent liquid or vapor from entering sumps or sewers since vapor is heavier than air and may form suffocating atmospheres.
- Do not release refrigerant during piping work for installation, re-installation and during repairing refrigeration parts. Take care of the liquid refrigerant, it may cause frostbite.
- Do not install this appliance in a laundry room or other location where water may drip from the ceiling, etc.
- Do not touch the sharp aluminium fin, sharp parts may cause injury.

- Carry out drainage piping as mentioned in installation instructions. If drainage is not perfect, water may enter the room and damage the furniture.
- Select an installation location which is easy for maintenance. Incorrect installation, service or repair of this air conditioner may increase the risk of rupture and this may result in loss damage or injury and/or property.
  For electrical work, follow the national regulation and legislation.
  Power supply connection to the room air conditioner.
  Use power supply cord 3 x 1.5 mm² type designation 60245 IEC 57 or heavier cord.
  Connect the power supply cord of the air conditioner to the mains using one of the following method.
  Power supply point should be in easily accessible place for power disconnection in case of emergency.
- In some countries, permanent connection of this air conditioner to the power supply is prohibited.
  1) Power supply connection to the receptacle using power plug.
     Use an approved 15/16 A power plug with earth pin for the connection to the socket.
  2) Power supply connection to a circuit breaker for the permanent connection.
     Use an approved 16 A circuit breaker for the permanent connection. It must be a double pole switch with a minimum 3.0 mm contact gap.
- Installation work. It may need two people to carry out the installation work.
- Keep any required ventilation openings clear of obstruction.

PRECAUTION FOR USING R32 REFRIGERANT

- Pay careful attention to the following points and the installation work procedures.

⚠ WARNING

- The appliance shall be stored, installed and operated in a well ventilated room with indoor floor area larger than A_{min} (m²) [refer Table A] and without any continuously operating ignition source. Keep away from open flames, any operating gas appliances or any operating electric heater. Else, it may explode and cause injury or death.
- The mixing of different refrigerants within a system is prohibited. Models that use refrigerant R32 and R410A have a different charging port thread diameter to prevent erroneous charging with refrigerant R22 and for safety. Therefore, check beforehand. [The charging port thread diameter for R32 and R410A is 12.7 mm (1/2 inch).]
- Ensure that foreign matter (oil, water, etc.) does not enter the piping. Also, when storing the piping, securely seal the opening by pinching, taping, etc. (Handling of R32 is similar to R410A.)
- Operation, maintenance, repairing and refrigerant recovery should be carried out by trained and certified personnel in the use of flammable refrigerants and as recommended by the manufacturer. Any personnel conducting an operation, servicing or maintenance on a system or associated parts of the equipment should be trained and certified.
- Any part of refrigerating circuit (evaporators, air coolers, AHU, condensers or liquid receivers) or piping should not be located in the proximity of heat sources, open flames, operating gas appliance or an operating electric heater.
- The user/owner or their authorized representative shall regularly check the alarms, mechanical ventilation and detectors, at least once a year, where as required by national regulations, to ensure their correct functioning.
- A logbook shall be maintained. The results of these checks shall be recorded in the logbook.
- In case of ventilations in occupied spaces shall be checked to confirm no obstruction.
- Before a new refrigerating system is put into service, the person responsible for placing the system in operation should ensure that trained and certified operating personnel are instructed on the basis of the instruction manual about the construction, supervision, operation and maintenance of the refrigerating system, as well as the safety measures to be observed, and the properties and handling of the refrigerant used.
- The general requirement of trained and certified personnel are indicated as below:
  a) Knowledge of legislation, regulations and standards relating to flammable refrigerants; and,
  b) Detailed knowledge of and skills in handling flammable refrigerants, personal protective equipment, refrigerant leakage prevention, handling of cylinders, charging, leak detection, recovery and disposal; and,
  c) Able to understand and to apply in practice the requirements in the national legislation, regulations and Standards; and,
  d) Continuously undergo regular and further training to maintain this expertise.
- Air-conditioner piping in the occupied space shall be installed in such a way to protect against accidental damage in operation and service.
- Precautions shall be taken to avoid excessive vibration or pulsation to refrigerating piping.
- Ensure protection devices, refrigerating piping and fittings are well protected against adverse environmental effects (such as the danger of water collecting and freezing in relief pipes or the accumulation of dirt and debris).
- Expansion and contraction of long runs piping in refrigerating systems shall be designed and installed securely (mounted and guarded) to minimize the likelihood hydraulic shock damaging the system.
- Protect the refrigerating system from accidental rupture due to moving furniture or reconstruction activities.
- To ensure no leaking, field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>1.04 MPa, max 4.15 MPa). No leak shall be detected.

⚠ CAUTION

1. General

- Must ensure the installation of pipe-work shall be kept to a minimum. Avoid use dented pipe and do not allow acute bending.
- Must ensure that pipe-work shall be protected from physical damage.
- Must comply with national gas regulations, state municipal rules and legislation. Notify relevant authorities in accordance with all applicable regulations.
- Must ensure mechanical connections be accessible for maintenance purposes.
- In cases that require mechanical ventilation, ventilation openings shall be kept clear of obstruction.
- When disposal of the product, do follow to the precautions in #11 and comply with national regulations.
- In case of field charge, the effect on refrigerant charge caused by the different pipe length has to be quantified, measured and labelled. Always contact to local municipal offices for proper handling.
- Ensure the actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
- Ensure refrigerant charge not to leak.
- Wear appropriate protective equipment, including respiratory protection, as conditions warrant.
- Keep all sources of ignition and hot metal surfaces away.

2. Servicing

2-1. Qualification of workers
- Any qualified person who is involved with working on or breaking into a refrigerant circuit should hold a current valid certificate from an industry-accredited assessment authority, which authorizes their competence to handle refrigerants safely in accordance with an industry recognized assessment specification.
- Servicing shall only be performed as recommended by the equipment manufacturer. Maintenance and repair requiring the assistance of other skilled personnel shall be carried out under the supervision of the person competent in the use of flammable refrigerants.
- Servicing shall be performed only as recommended by the manufacturer.
- The system is inspected, regularly supervised and maintained by a trained and certified service personnel who is employed by the person user or party responsible.

2-2. Checks to the area
- Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the precautions in #2-3 to #2-7 must be followed before conducting work on the system.

2-3. Work procedure
- Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

2-4. General work area
- All maintenance staff and others working in the local area shall be instructed and supervised on the nature of work being carried out.
- Avoid working in confined spaces. Always ensure away from source, at least 2 meter of safety distance, or zoning of free space area of at least 2 meter in radius.

2-5. Checking for presence of refrigerant
- The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with flammable refrigerants, i.e. non sparking, adequately sealed or intrinsically safe.
- In case of leakage/spillage happened, immediately ventilate area and stay upwind and away from spill/release.
- In case of leakage/spillage happened, do notify persons down wind of the leaking/spill, isolate immediate hazard area and keep unauthorized personnel out.

2-6. Presence of fire extinguisher
- If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available at hand.
- Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

2-7. No ignition sources
- No person carrying out work in relation to a refrigerating system which involves exposing any pipe work that contains or has contained flammable refrigerant shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. He/She must not be smoking when carrying out such work.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which flammable refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks.
- "No Smoking" signs shall be displayed.

2-8. Ventilated area
- Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work.
- A degree of ventilation shall continue during the period that the work is carried out.
- The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

2-9. Checks to the refrigerating equipment
- Where electrical components are being changed, they shall be fit for the purpose and to the correct specification.
- At all times the manufacturer's maintenance and service guidelines shall be followed.
- If in doubt consult the manufacturer's technical department for assistance.
- The following checks shall be applied to installations using flammable refrigerants.
  - The actual refrigerant charge is in accordance with the room size within which the refrigerant containing parts are installed.
  - The ventilation machinery and outlets are operating adequately and are not obstructed.
  - If an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant.
  - Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
  - Refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corroded refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are properly protected against being so corroded.

2-10. Checks to electrical devices
- Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures.
- Initial safety checks shall include but not limit to:-
  - That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking.
  - That there is no live electrical components and wiring are exposed while charging, recovering or purging the system.
  - That there is continuity of earth bonding.
- At all times the manufacturer's maintenance and service guidelines shall be followed.
- If in doubt consult the manufacturer's technical department for assistance.
- If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with.
- If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used.
- The owner of the equipment must be informed or reported so all parties are advised thereinafter.

3. Repairs to sealed components

- During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc.
- If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.
- Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.
- Ensure that apparatus is mounted securely.
- Ensure that seals or sealing materials have not degraded such that they no longer serve the purpose of preventing the ingress of flammable atmospheres.
- Replacement parts shall be in accordance with the manufacturer's specifications.

NOTE:	- The use of silicon sealant may inhibit the effectiveness of some types of leak detection equipment. - Intrinsically safe components do not have to be isolated prior to working on them.

4. Repair to intrinsically safe components

- Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.
- Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere.
- The test apparatus shall be at the correct rating.
- Replace components only with parts specified by the manufacturer. Unspecified parts by manufacturer may result ignition of refrigerant in the atmosphere from a leak.

5. Cabling

- Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.
- The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

6. Detection of flammable refrigerants

- Under no circumstances shall potential sources of ignition be used in the searching or detection of refrigerant leaks.
- A halide torch (or any other detector using a naked flame) shall not be used.
- The following leak detection methods are deemed acceptable for all refrigerant systems.
  - No leaks shall be detected when using detection equipment with a sensitivity of 5 grams per year of refrigerant or better under a pressure of at least 0,25 times the maximum allowable pressure (>1.04 MPa, max 4.15 MPa) for example, a universal sniffer.
  - Electronic leak detectors may be used to detect flammable refrigerants, but the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)
  - Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used.
  - Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed and the appropriate percentage of gas (25 % maximum) is confirmed.
  - Leak detection fluids are also suitable for use with most refrigerants, for example, bubble method and fluorescent method agents. The use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
  - If a leak is suspected, all naked flames shall be removed/extinguished.
  - If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. The precautions in #7 must be followed to remove the refrigerant.

7. Removal and evacuation

- When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

• remove refrigerant -> • purge the circuit with inert gas -> • evacuate -> • purge with inert gas -> • open the circuit by cutting or brazing

- The refrigerant charge shall be recovered into the correct recovery cylinders.
- The system shall be purged with OFN to render the appliance safe. (remark: OFN = oxygen free nitrogen, type of inert gas)
- This process may need to be repeated several times.
- Compressed air or oxygen shall not be used for this task.
- Purging shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum.
- This process shall be repeated until no refrigerant is within the system.
- When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place.
- This operation is absolutely vital if brazing operations on the pipe work are to take place.
- Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and there is ventilation available.

8. Charging procedures

- In addition to conventional charging procedures, the following requirements shall be followed.
  - Ensure that contamination of different refrigerants does not occur when using charging equipment.
  - Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
  - Cylinders shall be kept in an appropriate position according to the instructions.
  - Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.
  - Label the system when charging is complete (if not already).
  - Extreme care shall be taken not to over fill the refrigerating system.
- Prior to recharging the system it shall be pressure tested with OFN (refer to #7).
- The system shall be leak tested on completion of charging but prior to commissioning.
- A follow up leak test shall be carried out prior to leaving the site.
- Electrostatic charge may accumulate and create a hazardous condition when charging and discharging the refrigerant. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

9. Decommissioning

- Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its details.
- It is recommended good practice that all refrigerants are recovered safely.
- Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant.
- It is essential that electrical power is available before the task is commenced.
  a) Become familiar with the equipment and its operation.
  b) Isolate system electrically.
  c) Before attempting the procedure ensure that:
     - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
     - all personal protective equipment is available and being used correctly;
     - the recovery process is supervised at all times by a competent person;
     - recovery equipment and cylinders conform to the appropriate standards.
  d) Pump down refrigerant system, if possible.
  e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
  f) Make sure that cylinder is situated on the scales before recovery takes place.
  g) Start the recovery machine and operate in accordance with instructions.
  h) Do not over fill cylinders. (No more than 80 % volume liquid charge).
  i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
  j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
  k) Recovered refrigerant shall not be charged into another refrigerating system unless it has been cleaned and checked.
- Electrostatic charge may accumulate and create a hazardous condition when charging or discharging the refrigerant. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before charging/discharging.

10. Labelling

- Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant.
- The label shall be dated and signed.
- Ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

11. Recovery

- When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.
- When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed.
- Ensure that the correct number of cylinders for holding the total system charge are available.
- All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant).
- Cylinders shall be complete with pressure relief valve and associated shut-off valves in good working order.
- Recovery cylinders are evacuated and, if possible, cooled before recovery occurs.
- The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of concerning the equipment that is at hand and shall be suitable for the recovery of flammable refrigerants.
- In addition, a set of calibrated weighing scales shall be available and in good working order.
- Hoses shall be complete with leak-free disconnect couplings and in good condition.
- Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant Waste Transfer Note arranged.
- Do not mix refrigerants in recovery units and especially not in cylinders.
- If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.
- The evacuation process shall be carried out prior to returning the compressor to the suppliers.
- Only electric heating to the compressor body shall be employed to accelerate this process.
- When oil is drained from a system, it shall be carried out safely.

Required tools for Installation Works

1	Phillips screw driver	6	Pipe cutter	11	Thermometer	16	Torque wrench 18 N•m (1.8 kgf•m) 42 N•m (4.3 kgf•m) 55 N•m (5.6 kgf•m) 65 N•m (6.6 kgf•m) 100 N•m (10.2 kgf•m)
2	Level gauge	7	Reamer	12	Megameter		
3	Electric drill, hole core drill (ø70 mm)	8	Knife	13	Multimeter		
4	Hexagonal wrench (4 mm)	9	Gas leak detector	14	Vacuum pump		
5	Spanner	10	Measuring tape	15	Gauge manifold		

Attached accessories

No.	Accessories part	Qty.
1	Installation plate	1
2	Installation plate fixing screw	5
3	Remote Control	1
4	Battery	2
5	Remote control holder	1

No.	Accessories part	Qty.
6	Remote control holder fixing screw	2
7	Drain elbow	1

Applicable piping kit	Piping size	
	Gas	Liquid
CZ-3F5, 7BP	9.52 mm (3/8")	6.35 mm (1/4")
CZ-4F5, 7, 10BP	12.7 mm (1/2")	6.35 mm (1/4")
CZ-52F5, 7, 10BP	15.88 mm (5/8")	6.35 mm (1/4")

SELECT THE BEST LOCATION

INDOOR UNIT	OUTDOOR UNIT
❑ Do not install the unit in excessive oil fume area such as kitchen, workshop and etc. ❑ There should not be any heat source or steam near the unit. ❑ There should not be any obstacles blocking the air circulation. ❑ A place where air circulation in the room is good. ❑ A place where drainage can be easily done. ❑ A place where noise prevention is taken into consideration. ❑ Do not install the unit near the door way. ❑ Ensure the spaces indicated by arrows from the wall, ceiling, fence or other obstacles. ❑ Indoor unit of this air conditioner shall be installed in a height of at least 1.8 m.	❑ If an awning is built over the unit to prevent direct sunlight or rain, be careful that heat radiation from the condenser is not obstructed. ❑ There should not be any animal or plant which could be affected by hot air discharged. ❑ Keep the spaces indicated by arrows from wall, ceiling, fence or other obstacles. ❑ Do not place any obstacles which may cause a short circuit of the discharged air. ❑ If piping length is over the [piping length for additional gas], additional refrigerant should be added as shown in the (Table A).

Table A

Model	Capacity W (HP)	Piping size		Std. Length (m)	Max. Elevation (m)	Min. Piping Length (m)	Max. Piping Length (m)	Additional Refrigerant (g/m)	Piping Length for add. gas (m)	Max. Refrigerant Charge (kg)	A_{min} (m²)
		Gas	Liquid								
YU9***	1.0HP	9.52 mm (3/8")	6.35 mm (1/4")	5	15	3	20	10	7.5	0.58	Not applicable (*)
YU12***	1.5HP				15	3	20	10	7.5	0.60	Not applicable (*)

Example: For YU9***
If the unit is installed at 10 m distance,
the quantity of additional refrigerant should be
=> 10 m (distance) - 7.5 m (piping length for additional gas)
=> 2.5 m
=> 2.5 m x 10 g/m (additional Refrigerant) => 25 g

(*)=> Systems with total refrigerant charge, m_c lower than 1.84 kg are not subjected to any room area requirements.

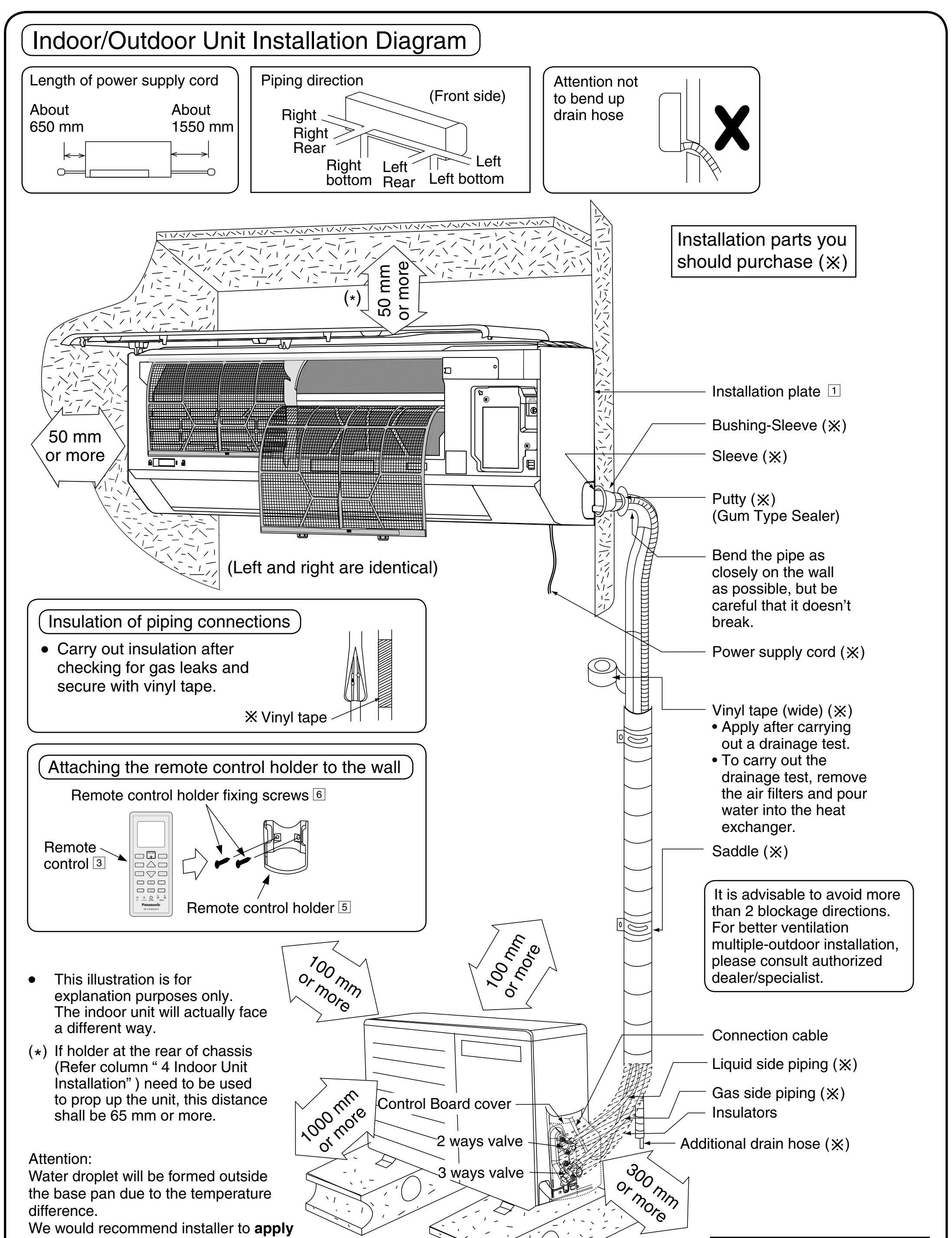
$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$ ** not less than safety factor margin

A_{min} = Required minimum room area, in m²
m_c = Refrigerant charge in appliance, in kg
LFL = Lower flammability limit (0.307 kg/m³)
h_0 = Installation height of the appliance : (1.8 m for wall mounted)
SF = Safety factor with a value of 0.75

** The required minimum room area, shall also be governed by the safety factor margin formula below :

$A_{min} = m_c / (SF \times LFL \times h_0)$ The higher value shall be taken when determining the room area.

Indoor/Outdoor Unit Installation Diagram



- This illustration is for explanation purposes only. The indoor unit will actually face a different way.

(*) If holder at the rear of chassis (Refer column " 4 Indoor Unit Installation") need to be used to prop up the unit, this distance shall be 65 mm or more.

Attention:
Water droplet will be formed outside the base pan due to the temperature difference.
We would recommend installer to **apply insulators onto the refrigerant pipes' and 2,3-way valve** in order to minimize the amount of condensate accumulated inside the base pan which cause the temperature difference.

ENGLISH

ACXF60-57250 (1/2)

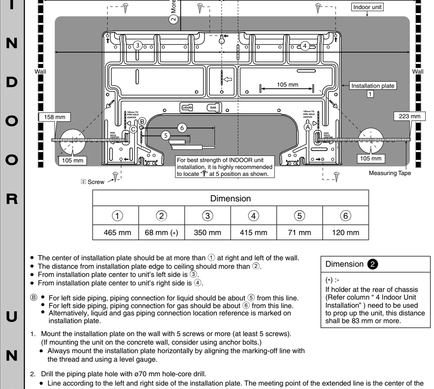
PRINTED IN MALAYSIA

INDOOR UNIT

1 SELECT THE BEST LOCATION (Refer to "Select the best location" section)

2 HOW TO FIX INSTALLATION PLATE

The mounting wall shall be strong and solid enough to prevent it from vibration.



Dimension					
①	②	③	④	⑤	⑥
465 mm	68 mm (+)	350 mm	415 mm	71 mm	120 mm

- The center of installation plate should be at more than ① at right and left of the wall.
- The distance from installation plate edge to ceiling should more than ②.
- From installation plate center to unit's left side is ③.
- From installation plate center to unit's right side is ④.

Ⓑ
- For left side piping, piping connection for liquid should be about ⑤ from this line.
- For left side piping, piping connection for gas should be about ⑤ from this line.
- Alternatively, liquid and gas piping connection location reference is marked on installation plate.

Dimension ②
(+) : -
If holder at the rear of chassis (Refer column * 4 Indoor Unit Installation") need to be used to prop up the unit, this distance shall be 83 mm or more.

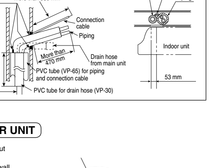
1. Mount the installation plate on the wall with 5 screws or more (at least 5 screws).
(If mounting the unit on the concrete wall, consider using anchor bolts.)
   - Always mount the installation plate horizontally by aligning the marking-off line with the thread and using a level gauge.
2. Drill the piping plate hole with ø70 mm hole-core drill.
   - Line according to the left and right side of the installation plate. The meeting point of the extended line is the center of the hole. Another method is by putting measuring tape at position as shown in the diagram above. The hole center is obtained by measuring the distance namely 105 mm for left and right hole respectively.
   - Drill the piping hole at either the right or the left and the hole should be slightly slanting to the outdoor side.

3 TO DRILL A HOLE IN THE WALL AND INSTALL A SLEEVE OF PIPING

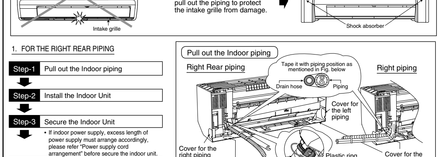
1. Insert the piping sleeve to the hole.
2. Fix the bushing to the sleeve.
3. Cut the sleeve until it extrudes about 15 mm from the wall.

CAUTION
When the wall is hollow, please be sure to use the sleeve for tube assembly to prevent dangers caused by mice biting the connection cable.

4. Finish by sealing the sleeve with putty or caulking compound at the final stage.



4 INDOOR UNIT INSTALLATION



- Do not turn over the unit without shock absorber during pull out the piping. It may cause intake grille damage.
- Use shock absorber during pull out the piping to protect the intake grille from damage.

1. FOR THE RIGHT REAR PIPING

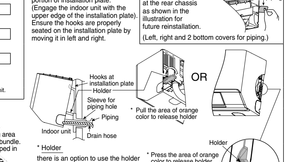
Step-1 Pull out the Indoor piping
Step-2 Install the Indoor Unit
Step-3 Secure the Indoor Unit
- If indoor power supply, excess length of power supply must arrange accordingly, please refer "Power supply cord arrangement" before secure the indoor unit.

Step-4 Insert the connection cable

2. FOR THE RIGHT AND RIGHT BOTTOM PIPING

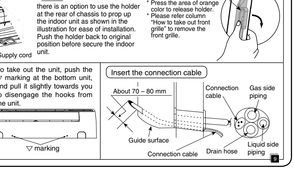
Step-1 Pull out the Indoor piping
Step-2 Install the Indoor Unit
Step-3 Insert the connection cable
Step-4 Secure the Indoor Unit
- If indoor power supply, excess length of power supply must arrange accordingly, please refer "Power supply cord arrangement" before secure the indoor unit.

Pull out the Indoor piping



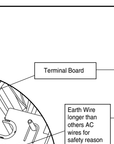
Install the indoor unit
Hook the indoor unit onto the upper portion of installation plate. (Engage the indoor unit with the upper edge of the installation plate). Ensure the hooks are properly seated on the installation plate by moving it in left and right.

How to keep the cover
In case of the cover is cut, keep the cover at the rear chassis as shown in the illustration for future reinstallation.
(Left, right and 2 bottom covers for piping.)

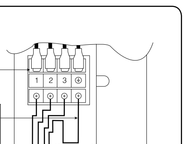


Secure the Indoor Unit
1. Power supply cord arrangement
Excess length of power supply cord should be arranged behind the chassis at piping keeping area as shown in the diagram without tying up in a bundle. Ensure that the power supply cord is not clamped in between unit's hook (2 position) and installation plate. Ensure that the power supply cord is not stretched between chassis back and installation plate. It may create squeak sound.
2. Press the lower left and right side of the unit against the installation plate until hooks engages with their slot (sound click).

To take out the unit, push the "▽" marking at the bottom unit, and pull it slightly towards you to disengage the hooks from the unit.



Insert the connection cable



3. FOR THE EMBEDDED PIPING

Step-1 Change the drain hose position
Step-2 Bend the embedded piping
- Use a spring bender or equivalent to bend the piping so that the piping is not crushed.

Step-3 Pull the connection cable into Indoor Unit
- The indoor unit and outdoor unit connection cable can be connected without removing the front grille.

Step-4 Cut and flare the embedded piping
- When determining the dimensions of the piping, slide the unit all the way to the left on the installation plate.
- Refer to the column "Cutting and flaring the piping".

Step-5 Install the Indoor Unit
Step-6 Connect the piping
- Please refer to "Connecting the piping" column in outdoor unit section. (Below steps are done after connecting the outdoor piping and gas-leakage confirmation.)

Step-7 Insulate and finish the piping
- Please refer to "Insulation of piping connection" column as mentioned in indoor/outdoor unit installation.

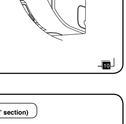
Step-8 Secure the Indoor Unit

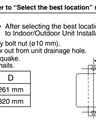
(This can be used for left rear piping also.)

Change the drain hose position

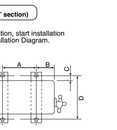
Rear view for left piping installation

Adjust the piping slightly downwards.



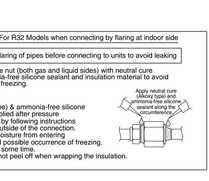


- In case of left piping how to insert the connection cable and drain hose.



(For the right piping, follow the same procedure)

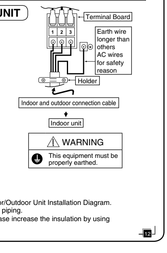
- How to pull the piping and drain hose out, in case of the embedded piping.



5 CONNECT THE CABLE TO THE INDOOR UNIT

The indoor and outdoor unit connection cable can be connected without removing the front grille.

① Install the indoor unit on the installing holder that mounted on the wall.
② Open the front panel and grille door by loosening the screw.
③ **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed. 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord.
Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.
Follow the national regulation and legislation for electrical work.
④ Bind all the indoor and outdoor **Connection cable** with tape and route the connection cable via the right side escapement.
⑤ Remove the terminal board cover and connection cable between indoor unit and outdoor unit according to the diagram below.



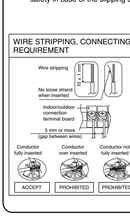
Terminals on the indoor unit	1	2	3	⏚
Colour of wires (connection cable)				
Terminals on the outdoor unit	1	2	3	⏚

WARNING
This equipment must be properly earthed.

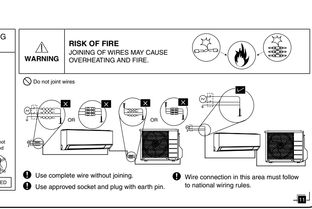
⑥ Secure firmly the connecting cable onto the control board with the holder. Do not overtighten holder screw, as this may damage the holder.
⑦ Close grille door by tighten with screw and close the front panel.

Note:
- Isolating Devices (Disconnecting means) should have minimum 3.0 mm contact gap.
- Ensure the colour of wires of outdoor unit and the terminal Nos. are the same to the indoor's respectively.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires as shown in the figure for the electrical safety in case of the slipping out of the cord from the anchorage.

WIRE STRIPPING, CONNECTING REQUIREMENT



WARNING
RISK OF FIRE
JOINING OF WIRES MAY CAUSE OVERHEATING AND FIRE.



OUTDOOR UNIT

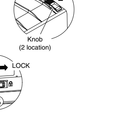
1 SELECT THE BEST LOCATION (Refer to "Select the best location" section)

2 INSTALL THE OUTDOOR UNIT

- After selecting the best location, start installation to Indoor/Outdoor Unit Installation Diagram.

① Fix the unit on concrete or rigid frame firmly and horizontally by bolt nut (ø10 mm).
Make sure unit install in balance level to ensure that water flow out from unit drainage hole.
② When installing at roof, please consider strong wind and earthquake.
Please fasten the installation stand firmly with bolt, screws or nails.

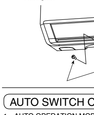
Model	A	B	C	D
1.0HP	474 mm	87 mm	18.5 mm	261 mm
1.5HP	570 mm	105 mm	18.5 mm	320 mm



3 CONNECT THE PIPING

Connecting The Piping to Indoor

For connection joint of all models
Please make flare after inserting (locate at joint point of tube assembly) onto the copper pipe. (In case of using long piping)
Connect the piping
- Align the center of piping and sufficiently tighten the flare nut with fingers.
- Further tighten the flare nut with torque wrench in specified torque as stated in the table.

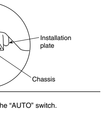


Additional Precautions For R32 Models when connecting by flaring at indoor side

Ensure to do re-flaring of pipes before connecting to units to avoid leaking

Seal sufficiently the flare nut (both gas and liquid sides) with neutral cure (Alkoxy type) & ammonia-free silicone sealant and insulation material to avoid the gas leak caused by freezing.

Neutral cure (Alkoxy type) & ammonia-free silicone sealant is only to be applied after pressure testing and cleaning up by following instructions of sealant, only to the outside of the connection. The aim is to prevent moisture from entering the connection joint and possible occurrence of freezing. Curing sealant will take some time.
Make sure sealant will not peel off when wrapping the insulation.



Connecting The Piping to Outdoor

Decide piping length and then cut by using pipe cutter.
Remove burrs from cut edge.
Make flare after inserting the flare nut (locate at valve) onto the copper pipe.
Align center of piping to valve and then tighten with torque wrench to the specified torque as stated in the table.

Do not overtighten, overtightening may cause gas leakage.

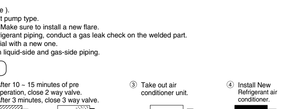
Piping size	Torque
6.35 mm (1/4")	[18 Nm (1.8 kgfm)]
9.52 mm (3/8")	[42 Nm (4.3 kgfm)]
12.7 mm (1/2")	[55 Nm (5.6 kgfm)]
15.88 mm (5/8")	[65 Nm (6.6 kgfm)]
19.05 mm (3/4")	[100 Nm (10.2 kgfm)]

5 CONNECT THE CABLE TO THE OUTDOOR UNIT

① Remove the control board cover from the unit by loosening the screw.
② **Connection cable** between indoor unit and outdoor unit shall be approved polychloroprene sheathed 4 x 1.5 mm² flexible cord, type designation 60245 IEC 57 or heavier cord. Do not use joint connection cable. Replace the wire if the existing wire (from concealed wiring, or otherwise) is too short.
Follow the national regulation and legislation for electrical work.

Terminals on the outdoor unit	1	2	3	⏚
Colour of wires				
Terminals on the indoor unit	1	2	3	⏚

③ Secure the cable onto the control board with the holder (clamper).
④ Attach the control board cover back to the original position with screw.
⑤ For wire stripping and connection requirement, refer to instruction ⑤ of indoor unit.
- Earth wire shall be Yellow/Green (Y/G) in colour and longer than other AC wires for safety reason.



WARNING
This equipment must be properly earthed.

6 PIPING INSULATION

1. Please carry out insulation at pipe connection portion as mentioned in Indoor/Outdoor Unit Installation Diagram.
Please wrap the insulated piping end to prevent water from going inside the piping.
2. If drain hose or connecting piping is in the room (where dew may form), please increase the insulation by using POLY-E FOAM with thickness 6 mm or above.

AIR PURGING METHOD IS PROHIBITED FOR R32 SYSTEM

4 AIR TIGHTNESS TEST ON THE REFRIGERATING SYSTEM

Do not purge the air with refrigerants but use a vacuum pump to vacuum the installation.

There is no extra refrigerant in the outdoor unit for air purging.

- Before system is charged with refrigerant and before the refrigerating system is put into operation, below site test procedure and acceptance criteria shall be verified by the certified technicians, and/or the installer.
- Be sure to check whole system for gas leakage.

Preparation (Step 1-2)
1) Connect a charging hose with a push pin to the Low side of a charging set and the service port of the 3-way valve. During extremely cold winter, material contraction might happened, try to further tighten the 2-way, 3-way valve to ensure they are fully closed.
2) Attach the gauge manifold set correctly and tightly. Make sure that both valves of the manifold gauge (low pressure and high pressure) is in close position.

Evacuation (Step 3-4)
3) Connect the center hose of the manifold gauge to a vacuum pump.
4) Turn on the power switch of the vacuum pump, then turn open the low side manifold gauge valve and make sure that the needle in the gauge moves from 0cmHg (0 MPa) to −76 cmHg (−0.1 MPa) or vacuum until 500 microns is achieved. This process continues for approximately ten minutes.
Then close the low side manifold gauge valve.

Tightness Test with Inert Gas (Step 5-7)
5) Remove the vacuum pump from the centre hose and connect the center hose to cylinder of any applicable inert gas as test gas.
6) Charge test gas into the system and wait until the pressure within the system to reach min. 1.04 MPa (10.4bar).
7) Wait and monitor the pressure reading on the gauges. Check if there is any pressure drop. Waiting time depends on the size of the system.
8) If there is any pressure drop, perform step 9-12. If there is no pressure drop, perform step 13.

Pressure drop? (Step 8) YES → **Leak detection and repair (Step 9-12)**

Recovery of Test Gas (Step 13)
9) Use Gas Leak Detector to check for leaks. Must use the detection equipment with a sensitivity of 5 grams per year of test gas or better.
10) Move the probe along the air conditioning system to check for leaks, and mark for repair.
11) Any leak detected and marked shall be repaired.
12) After repair, repeat evacuation steps 3-4 and tightness test steps 5-7.
Check the pressure drop as in step 8.

NO →

Recovery of Test Gas (Step 13)
13) If no leak.
Recover the test gas. Perform evacuation of steps 3-4.
Then proceed to step 14.

Evacuation (Step 3-4)
14) Disconnect the charging hose from the service port of the 3-way valve.
15) Tighten the service port caps of the 3-way valve at a torque of 18 Nm with a torque wrench.
16) Remove the valve caps of both of the 2-way valve and 3-way valve.
17) Open both of the valves, using a hexagonal wrench (4 mm).
It is recommended to allow refrigerant slowly flow into the refrigerant system to prevent refrigerant freezing. Slightly open 2-way valve for 5 seconds then close the valve. Repeat this action for 3 cycles then fully open the valve.
18) Mount back the valve caps onto the 2-way valve and the 3-way valve to complete this process.

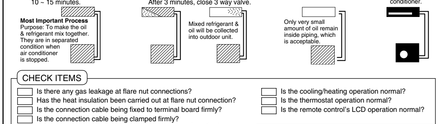
Open 2 and 3 valves (Step 14-18)

Complete

Notes: Recommended use of any of the following leak detector.
i) Universal Sniffer leak detector
ii) Electronic halogen leak detector
iii) Ultrasonic Leak Detector

CUTTING AND FLARING THE PIPING

1. Please cut using pipe cutter and then remove the burrs.
2. Remove the burrs by using reamer. If burrs is not removed, gas leakage may be caused. Turn the piping end down to avoid the metal powder entering the pipe.
3. Please make flare after inserting the flare nut onto the copper pipes.



When properly flared, the internal surface of the flare will evenly shine and be of even thickness. Since the flare part comes into contact with the connections, carefully check the flare finish.

HOW TO TAKE OUT FRONT GRILLE

Please follow the steps below to take out front grille if necessary such as when installing or servicing.
① Set the vertical airflow vane to slightly downward.
② Slide the 2 knobs on the upside of front grille away from the center to release them.
③ Open front panel.
④ Remove the 1 screw on the front grille as shown in the illustration.

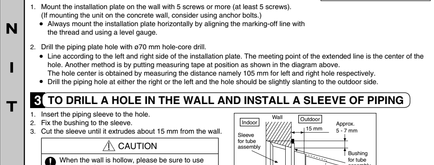
⑤ Slide the 2 knobs on the front grille to unlock position.
⑥ Pull the front grille towards you to remove the front grille.

When reinstalling the front grille, carry out above steps in the reverse order.

After sliders are slide to lock position, please confirm front grille is securely fixed by pulling the front grille towards you.

SCREW CHASSIS TO INSTALLATION PLATE

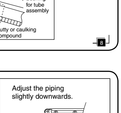
Fasten the chassis to the installation plate with screws (Self purchase, Screw size: M4, max. length 10 mm) to provide a neat appearance of indoor unit.
Please refer column "How to take out front grille" to remove the front grille.



AUTO SWITCH OPERATION

The below operations will be performed by pressing the "AUTO" switch.

1. AUTO OPERATION MODE
The Auto operation will be activated immediately once the Auto Switch is pressed and release within 5 sec..
2. TEST RUN OPERATION (FOR PUMP DOWN/SERVICING PURPOSE)
The Test Run operation will be activated if the Auto Switch is pressed continuously for more than 5 sec. to below 9 sec.. A "pep" sound will occur at the fifth sec., in order to identify the starting of Test Run operation.
3. REMOTE CONTROLLER RECEIVING SOUND ON/OFF
The ON/OFF of Remote controller receiving sound can be change over by the following steps:
a) Press "AUTO" switch continuously for more than 16 sec. to below 21 sec.. A "pep", "pep", "pep", "pep" sound will occur at the sixteenth sec..
b) Press the "AC Reset" button once, "pep" sound will occur indicates that Remote controller receiving sound setting mode is activated.
c) Press "AUTO" switch again. Everytime "AUTO" switch is pressed (within 60 sec. interval), Remote controller receiving sound status will be reversed between ON and OFF.
Long "peep" sound indicates that Remote controller receiving sound is ON.
Short "pep" sound indicates that Remote controller receiving sound is OFF.



DISPOSAL OF OUTDOOR UNIT DRAIN WATER

- If a drain elbow is used, the unit should be placed on a stand which is taller than 5 cm.
- If the unit is used in an area where temperature falls below 0°C for 2 or 3 days in succession, it is recommended not to use a drain elbow, for the drain water freezes and the fan will not rotate.

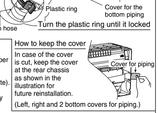
CHECK THE DRAINAGE

- Open front panel and remove air filters.
(Drainage checking can be carried out without removing the front grille.)
- Pour a glass of water into the drain tray-styrofoam.
- Ensure that water flows out from drain hose of the indoor unit.

EVALUATION OF THE PERFORMANCE

- Operate the unit at cooling/heating operation mode for fifteen minutes or more.
- Measure the temperature of the intake and discharge air.
- Ensure the difference between the intake temperature and the discharge is more than 8 °C during Cooling operation or more than 14 °C during Heating operation.

Note:
- During winter, turn on the power supply and standby the unit for at least 15 minutes before test run. Allow sufficient time to warm up refrigerant and prevent wrong error code judgement.



IN CASE OF REUSING EXISTING REFRIGERANT PIPING

☐ Observe the followings to decide reusing the existing refrigerant piping.
Poor refrigerant piping could result in product failure.
- In the circumstances listed below, do not reuse any refrigerant piping. Instead, make sure to install a new piping.
  - Heat insulation is not provided for either liquid-side or gas-side piping or both.
  - The existing refrigerant pipe has been left in an open condition.
  - The diameter and thickness of the existing refrigerant piping does not meet the requirement.
  - The piping length and elevation does not meet the requirement.
Perform proper pump down before reuse piping.
- In the circumstances listed below, clean it thoroughly before reuse.
  - Pump down operation cannot be performed for the existing air-conditioner.
  - The compressor has a failure history.
  - Oil color is darken. (ASTM 4.0 and above).
  - The existing air-conditioner is gas/oil heat pump type.
- Do not reuse the flare to prevent gas leak. Make sure to install a new flare.
- If there is a welded part on the existing refrigerant piping, conduct a gas leak check on the welded part.
- Replace deteriorated heat insulating material with a new one.
Heat insulating material is required for both liquid-side and gas-side piping.

Proper Pump Down Method

① Operate air conditioner at cooling mode for 10 – 15 minutes.
Most Important Process
Purpose: To make the oil & refrigerant mix together. They are in separated condition when air conditioner is stopped.

② After 10 – 15 minutes of pre operation, close 2 way valve. After 3 minutes, close 3 way valve.
Mixed refrigerant & oil will be collected into outdoor unit.

③ Take out air conditioner unit.
Only very small amount of oil remain inside piping, which is acceptable.

④ Install New Refrigerant air conditioner.

CHECK ITEMS

- ☐ Is there any gas leakage at flare nut connections?
- ☐ Has the heat insulation been carried out at flare nut connection?
- ☐ Is the connection cable being fixed to terminal board firmly?
- ☐ Is the connection cable being clamped firmly?
- ☐ Is the drainage ok? (Refer to "Check the drainage" section)
- ☐ Is the earth wire connection properly done?
- ☐ Is the indoor unit properly hooked to the installation plate?
- ☐ Is the power supply voltage complied with rated value?
- ☐ Is there any abnormal sound?
- ☐ Is the cooling/heating operation normal?
- ☐ Is the thermostat operation normal?
- ☐ Is the remote control's LCD operation normal?

ENGLISH

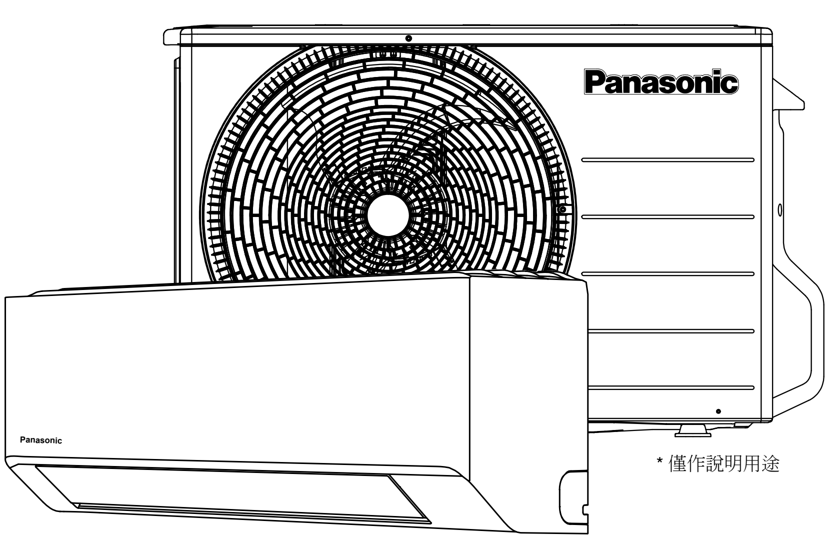
ACXF60-57250 (2/2)
PRINTED IN MALAYSIA

Panasonic®

ACXF60-57260

安裝説明

空調器



* 僅作說明用途

型號： CS/CU-YU9*** (1.0HP)
CS/CU-YU12*** (1.5HP)

⚠ 注意

R32
冷媒

此空氣調節機包含 R32 冷凍劑并利用 R32 冷凍劑進行操作。

須由具備資質的人員對此產品進行安裝或檢修。

對此產品進行安裝、保養和/或檢修之前，請參閱国家、州、地區和地方法律、條例、法規、安裝和操作手冊。

室內機或室外機顯示的符號說明。

(符號)	警告	這符號顯示這個設備使用了一種輕度易燃的冷凍劑。如果冷凍劑與外部點火源一起洩漏，則有可能引燃。
(符號)	注意	這個符號表示應該仔細閱讀安裝手冊。
(符號)	注意	此符號表示檢修人員應參照“安裝手冊”處理此設備。
(符號)	注意	此符號表示操作手冊和/或安裝手冊中包含了信息。

對於因詳細手冊中未描述的任何不當安裝而導致的任何事故或損壞，Panasonic 概不負責。由不正確的安裝引起的故障也不在產品保修範圍內。

安全措施

- 安裝之前請詳細閱讀此“安全措施”。
- 電氣工作必須由授權技工安裝。請務必使用有正確額定電壓的插頭與主電路。
- 請務必遵照所述注意事項，因為其重要內容與您的安全息息相關。各符號的意義如下。忽視指示造成安裝不當，可能會導致受傷或損壞，其嚴重程度如下所示。

⚠ 警告	此符號表示可能導致死亡或重傷。	應遵照的注意項目乃依以下符號分類：	⃠	白色底的符號表示被禁止的項目。
⚠ 注意	此符號表示可能只導致受傷或機件損壞。		❗ ⏚	深色底的符號表示必須進行的項目。

- 安裝後進行運轉測試以確保一切正常操作。接著，依照使用說明書向使用者解釋操作，照顧和保養之方法。請提醒使用者妥善保存使用說明書以供將來參考之用。

如果將設備轉讓給新用戶或交付給回收工廠，請務必同時轉交手冊。

⚠ 警告

- 除非製造商推薦，否則切勿使用工具加速除霜過程或進行清理。
  任何不適宜的方法或使用不適當的材料可能導致產品損壞、破裂和嚴重損害。
- 不要將室外機安裝在靠近陽臺的扶手。當在高樓的陽臺安裝空氣調節機時，必須注意小孩可能會爬上室外機並爬出扶手，繼而導致意外發生。
- 勿使用非指定電纜、改裝電纜、接駁電纜或延長電纜作為電源電纜。勿與其他電器共用一個插頭。接觸不良、絕緣不良或電流超額將會導致觸電或火災。
- 切勿用帶子將電源電纜紮成一捆。
  電源電纜可能會異常升溫。
- 切勿將您的手指或其他物體插入本機，高速轉動的風扇可能會導致損傷。
- 切勿坐或踩踏在本機上以免意外摔跤。
- 將塑膠袋（包裝材料）遠離小孩，它可能會粘附在鼻子和嘴巴導致窒息。
- 當安裝或重新安裝空氣調節機時，除指定冷凍劑外，勿讓任何物體，例如空氣等，混入製冷循環系統（導管）。空氣等的加入將會導致製冷循環系統出現異常高壓並導致爆炸、受傷等等。
- 切勿刺穿或燃燒，因為本設備已加壓。切勿讓本設備接觸高溫、明火、火花或其他點火源。否則，可能發生爆炸，導致受傷或死亡。
- 切勿添加或更換指定類型以外的冷凍劑。這可能會導致產品損壞、破裂、損傷等。

- 對於 R32/R410A 模型，請使用 R32/R410A 冷凍劑所指定的導管、擴口螺母及工具。使用現有的 (R22) 導管、擴口螺母及工具可能會導致（導管）冷凍周期出現不尋常高壓，並可能會造成爆炸和受傷。
  對於 R32 和 R410A，可使用同樣的室外機側擴口螺母和導管。
- 由於 R32/R410A 的工作壓力高於冷凍劑 R22 型號的工作壓力，因此建議更換室外機側的常規導管和擴口螺母。
- 如果不得不重新使用導管，請參閱指示“在重新使用現有冷凍劑配管的情況下”
- 使用於 R32/R410A 的銅管厚度必須超過 0.8 mm 千萬不要使用厚度低於 0.8 mm 的銅管。
- 殘油的數量最好低於 40 mg/10 m。
- 僱用授權代理商或專人代為安裝。
  如果用戶自行安裝不正確，將會引起漏水、觸電或火患。
- 製冷系統作業時，應嚴格按照本安裝說明進行安裝。安裝不得法將會引起漏水、觸電或火患。
- 安裝時務請使用所列之附送或指定之配件。否則這將導致本機掉落、漏水、火災或觸電。
- 安裝于堅硬和牢固得足以支撐空氣調節機之重量的位置。如果堅固度不足或安裝不得法，空氣調節機將會掉下和致傷人。
- 應遵循國家法規、法律及本安裝說明手冊進行電氣作業。一定要使用獨立電路和單一出口。若電路容量不夠或電線安裝出錯，會導致觸電或火患。
- 勿使用接駁電纜為室內/室外連接電纜。使用特定的室內/室外連接電纜，請參閱指示 ⑤ **將電纜連接至室內機**，並緊緊地把室內/室外連接起來。夾緊電纜，使外力對端子無效。若銜接和安裝不妥，會導致銜接處發熱或產生火患。
- 電線排列須妥當安排，以避免暴露控制板蓋。如果控制板蓋沒有完全地蓋好，它可能會導致火患或觸電。
- 強力建議為此設備安裝靈敏度 30 毫安/0.1 秒或以下的通地線漏電路斷路器 (ELCB) 或殘餘電流裝置 (RCD)。否則，當設備故障或絕緣故障等情況發生時可能會導致觸電或火患。
- 進行安裝時，請在啟動壓縮機前妥善地安裝冷凍劑導管。在沒有安裝冷凍劑導管和將閥設至開放位置的情況下操作壓縮機將會導致空氣被吸入、製冷循環系統出現異常高壓並導致爆炸、受傷等等。
- 在進行抽氣操作時，請在拆除冷凍劑導管之前關閉壓縮機。在壓縮機正在操作和閥在開放狀態的情況下拆除冷凍劑導管將會導致空氣被吸入、製冷循環系統出現異常高壓並導致爆炸、受傷等等。
- 根據所設定的方法使用扭力扳手鎖緊接頭螺母。如果將接頭螺母鎖得太緊，經過一段長時間後，接頭螺母可能會爆裂和導致冷凍氣洩漏。
- 安裝完畢後，確定沒有冷凍氣洩漏。冷凍劑一旦和火接觸可能會產生有毒氣體。
- 若在操作期間發生冷凍氣洩漏，請立刻進行通風。冷凍劑一旦和火接觸可能會產生有毒氣體。
- 應意識到冷凍劑不得有氣味。

- 此設備必須正確地接地。地線不可以被連接至煤氣管、水管、避雷針地線和電話線地線。否則，當設備故障或絕緣故障等情況發生時可能會導致觸電。

⚠ 注意

- 勿將空氣調節機安裝于易燃氣體可能泄漏之處。氣體泄漏和積存于空氣調節機周圍可能會引起火患。
- 防止液體或蒸汽進入污水坑或下水道，因為蒸汽比空氣重，可能形成窒息氣氛。
- 進行喉管工作、重新安裝和維修冷凍件時不要放出冷凍劑。
  小心處理液體製冷劑，它可能會導致凍傷。
- 請勿安裝本裝置於洗衣房或其他有水自天花板等滴落之處。
- 切勿觸摸尖銳的鋁散熱片以免受到尖銳部件傷害。

- 依照安裝說明書安裝排水管。
  排水管若安裝不當，水滴可能會弄濕房間和損壞家具。
- 選擇容易進行維修工作的安裝位置。此空氣調節機安裝、檢修或維修不當可能增加破裂的風險，因而可能導致損失、損壞或受傷和/或財物損失。
  至於電氣工作，請遵循國家法規和法律。
  室內空氣調節機的電源銜接。
  請使用 3 x 1.5 mm² 類型標明為 60245 IEC 57 或更重的電纜為電源電纜。
  用以下其中一種方法將空調器的電源電纜連接到總線。
  電源點應該位于容易接近的地方以便在發生緊急事故時可以容易地切斷電源。
- 某些國家禁止空氣調節機永久性銜接電源供應。
  1) 用電插頭塞入插孔以銜接電源。
     用有地線的合格 15/16A 電插頭塞入插孔以連接電源。
  2) 將電源永久性銜接到電流切路器。
     用合格 16A 電流切路器進行永久連接。而且至少有 3.0 mm 空隙的雙极開關。
- 安裝工作。安裝工作可能動用兩人。
- 確保所有通風口保持暢通無阻。

使用 R32 冷凍劑注意事項

- 請密切注意以下幾點和安裝工作程序。

⚠ 警告

- 本設備應儲存、安裝并工作於通風良好的空間內，室內面積應大於 A_{min} (m²) [參見表 A] 並且不存在任何連續操作的點火源。遠離明火、任何工作中的燃氣設備或任何工作中的電熱器。否則，可能發生爆炸，導致受傷或死亡。
- 禁止在系統內混合不同的冷凍劑。為安全起見，使用 R32 和 R410A 冷凍劑的型號具有不同的充填端口螺紋直徑，以防錯誤充填 R22 冷凍劑。
  因此，應事先檢查。[R32 和 R410A 的充填端口螺紋直徑為 12.7 mm (1/2 英寸)。]
- 確保無異物（油、水等）進入導管。
  而且，當儲存導管時，應通過夾緊、黏貼等方式緊密密封管口。(R32 之操作與 R410A 相似。)
- 操作、維護、修理以及冷凍劑回收應根據製造商的建議，由在使用可燃性冷凍劑方面經過培訓和認證的人員處理。在設備的系統或相關部分上進行操作、維修或維護的任何人員都應該經過培訓和認證。
- 製冷迴路（蒸發器，空氣冷卻器，AHU，冷凝器或液體接收器）或管道的任何部位不應位於熱源、明火、操作燃氣器具或工作中的電熱器附近。
- 用戶/所有者或授權代表應按照國家規定的要求，至少定期每年檢查一次報警器、機械通風器和探測器並確保其正確運作。
- 應該保持日誌更新。檢查結果應記錄在日誌中。
- 應檢查佔用空間內的通風情況，並確認沒有障礙物。
- 在使用新的製冷系統前，負責系統運行者應確保經過培訓和認證的操作人員根據說明手冊對冷凍系統進行施工、監理、運行和維護， 以及要遵守所有安全措施，以及所使用的冷凍劑的特性和處理。
- 培訓和認證人員的一般要求如下：
  a) 了解有關可燃性冷凍劑的立法、法規和標準; 以及，
  b) 擁有處理可燃性冷凍劑、個人防護設備、防止冷凍劑洩漏、處理鋼瓶、充電、洩漏偵測、回收和處置方面的詳細知識和技能; 以及，
  c) 理解和實踐國家立法，法規和標準的要求; 以及，
  d) 持續進行定期和進一步的培訓，以確保持續持有專業知識。
- 應妥善安裝佔用空間內的空調器管道，以免操作和維修時造成意外損壞。
- 應採取措施避免冷凍劑導管發生過度振動或跳動。
- 應為保護裝置、製冷管道和配件提供良好保護，使其免受不良環境影響（例如， 排水管積水和凍結風險或污物和碎屑堆積風險）。
- 製冷系統長管道的膨脹與收縮應妥善設計並安裝牢固（妥善安裝和保護），盡可能將液壓衝擊對系統造成損壞的可能性降至最低。
- 應妥善保護製冷系統，避免因移動家具或重建活動等而發生意外破裂。
- 應對室內整體鑄造製冷劑管接頭進行氣密性測試，確保無洩漏。在至少 0.25 倍於最大容許壓力的壓力 (>1.04 MPa，最大 4.15 MPa) 下，該測試方法應當具有每年 5 克製冷劑或更好的靈敏度。不應偵測到洩漏。

⚠ 注意

1. 一般

- 必須確保管件的安裝應保持在最低限度。避免使用凹進的管道，不容許存在銳角彎曲。
- 必須確保管件免受實體損傷。
- 必須遵循國家氣體法規、州市政規定和法律。
  應依照所有適用法規通知有關當局。
- 必須確保機械連接便於進行保養。
- 若需要機械通風，則通風口應不存在障礙物。
- 當處置此產品時，務必遵循第 11 部分中的注意事項并遵循國家法規。
- 由不同管道長度造成的冷凍劑充注必須量化、測量和標記。始終應聯繫當地市政廳，以確保適當操作。
- 確保實際冷凍劑充填容量視含冷凍劑部分所安裝之空間的大小而定。
- 確保冷凍劑充注不洩漏。
- 倘若條件容許，應佩戴適當的防護設備，包括呼吸防護器。
- 應遠離所有點火源和熱金屬表面。

2. 檢修

2-1. 工作人員資格
- 參與冷凍劑迴路工作或介入冷凍劑迴路的任何具備資質的人員均應持有由行業認可之評估機構頒發的當前有效憑證，該評估機構授權他們有能力依照業內公認的評估規範安全操作冷凍劑。
- 必須按照設備製造商的建議進行檢修。需要其他熟練技術人員協助的保養和維修工作應當在能夠勝任可燃性冷凍劑使用的人員之監督下進行。
- 必須按照製造商的建議進行檢修。
- 系統由受僱於該用戶或負責人的經過培訓和認證的檢修人員進行進行檢查、定期監督和維護。

2-2. 檢查該區域
- 開始在包含可燃性冷凍劑的系統上作業之前，必須進行安全檢查，以確保將引燃之風險降至最低。
  對製冷系統進行維修時，開始在系統上作業之前，必須遵循第 2-3 部分至第 2-7 部分的注意事項。

2-3. 作業程序
- 應按照可控的程式進行作業，以便將工作期間存在可燃氣體或蒸汽的風險降至最低。

2-4. 一般作業區域
- 應當將所進行作業之性質告知在該區域內作業的所有維護人員和其他人員并予以監督。
- 避免在局限空間內作業。務必確保遠離源頭至少 2 米的安全距離，或半徑至少半徑 2 米的自由空間區域。

2-5. 檢查是否存在冷凍劑
- 在作業之前及作業過程中，應使用適當的冷凍劑偵測器檢測該區域，確保技術人員知曉潛在的易燃空氣。
- 確保所使用的洩漏偵測設備適用於可燃性冷凍劑，即，無火花、充分密封或本質安全。
- 如果發生洩漏/溢漏，應立即為該區域進行通風，保持逆風并遠離溢漏/洩漏。
- 如果發生洩漏/溢漏，應通知洩漏/溢漏順風方向之人員、立即隔離危害區域，非授權人員不得進入該區域。

2-6. 備有滅火器
- 若要在製冷設備或任何關聯零件上進行任何高溫作業，應確保適當的滅火設備隨時可供使用。
- 充填區域附近應配置乾粉滅火器或 CO_2 滅火器。

2-7. 無點火源
- 進行與製冷系統（涉及曝露包含可燃性冷凍劑的任何管件）相關之作業的任何人員均不得使用任何點火源，因為這可能導致火災或爆炸風險。該人員進行此類作業時嚴禁吸煙。
- 包括吸煙在內的所有可能之點火源均應足夠遠離安裝、維修、拆卸和處理區域，因為在這些作業期間，可燃性冷凍劑可能被排放至周圍環境中。
- 進行作業之前，應檢查設備周圍區域，確保不存在易燃危險或點火風險。
- 應設置“禁止吸煙” 標誌。

2-8. 通风區域
- 介入該系統或進行任何高溫作業之前，應確保該區域寬敞或充分通風。
- 進行作業期間應保持一定程度的通風。
- 通風應當能夠安全分散任何洩漏的冷凍劑，最好將其驅散至外部環境中。

2-9. 製冷設備檢查
- 更換電氣部件時，該電氣部件應符合預期用途并具備正確的規格。
- 始終應遵循製造商的保養和檢修規範。
- 如有疑問，請諮詢製造商的技術部門獲取協助。
- 以下檢查應適用于使用可燃性冷凍劑的安裝。
  - 實際冷凍劑充填容量視含冷凍劑部分所安裝之空間的大小而定。
  - 通風機器和出風口正常工作且不存在障礙物。
  - 如果使用間接製冷迴路，應檢查二次迴路是否存在冷凍劑。
  - 設備標記持續可見、易辨認。應更正難辨認的標記和標誌。
  - 冷凍劑導管或部件不應安裝於可能使含冷凍劑部件暴露于任何存在腐蝕物質的位置，除非這些部件由本質上耐蝕材料製成或者得到適當的防腐蝕保護。

2-10. 電氣設備檢查
- 電氣部件的維修和保養應包括初始安全檢查和部件檢查程式。
- 初始安全檢查應包括但不限於：
  - 電容器已放電：應以安全方式完成放電，避免產生火花。
  - 對系統進行充填、回收或排氣操作時，不存在暴露的電氣部件和電線。
  - 接地連接妥當。
- 始終應遵循製造商的保養和檢修規範。
- 如有疑問，請諮詢製造商的技術部門獲取協助。
- 如果存在可能危及安全的故障，則在妥善處理故障之前不得為電路接通电源。
- 如果故障無法立即糾正，但又必須繼續操作，則應採取適當的臨時解決方案。
- 必須通知或報告設備所有者，確保各方均已知悉。

3. 密封部件維修

- 維修密封部件期間，在拆下密封盖等之前，應為待作業的設備斷開所有電源。
- 如果在檢修期間必須為設備接通電源，則應在最關鍵點進行持續的洩漏偵測，為潛在的危險情況提供預警。
- 應特別注意下列情況，確保在電氣部件上進行作業時，不會變更護罩，導致保護水準受到影響。包括電纜損壞、連接過多、端子並非原始規格、密封件損壞、密封壓蓋裝配不當等。
- 確保裝置安裝妥當。
- 確保密封件或密封材料未發生劣化，否則它們將不再起到阻止易燃空氣進入的作用。
- 替換零件應依照製造商之規格。

備註：	- 使用玻璃膠可能抑制某些類型的洩漏偵測設備之有效性。 - 本質安全部件在作業之前不必隔離。

4. 本質安全部件維修

- 切勿為電路施加任何固定電感負載或電容負載，除非可確保負載不會超過所使用設備的容許電壓和電流。
- 當存在易燃空氣時，本質安全部件是唯一可以進行作業的類型。
- 試驗裝置應具備正確的額定值。
- 僅使用製造商指定之零件更換部件。製造商未指定之零件可能導致洩漏在大氣中的冷凍劑引燃。

5. 電纜

- 檢查以確保電纜不會受到磨損、腐蝕、超壓、振動、銳緣或任何其他不良環境影響。
- 此檢查還應考慮老化或者壓縮機或風扇等持續振動源的影響。

6. 可燃性冷凍劑之偵測

- 探測或偵測冷凍劑洩漏時，在任何情況下，均不得使用潛在的點火源。
- 不得使用鹵素燈（或使用明火的任何其他偵測器）。
- 以下泄漏檢測方法適用於所有冷凍劑系統。
  - 當使用在至少 0.25 倍于最大容許壓力的壓力(>1.04 MPa，最大 4.15 MPa) 下具有每年 5 克製冷劑或更好的靈敏度的洩漏偵測設備（例如，通用嗅探器）進行偵測時，不應偵測到洩漏。
  - 應使用電子洩漏偵測器來偵測可燃性冷凍劑，但是靈敏度可能不足，或者可能需要重新校準。（應當在無冷凍劑區域進行偵測設備校準。）
  - 確保偵測器不是潛在的點火源並且適合所使用之冷凍劑。
  - 洩漏偵測設備應設置于冷凍劑燃燒下限的某一百分比并應針對冷凍劑進行校準，并確定氣體之適當百分比 (最大 25 %)。
  - 洩漏偵測流體適合與大多數冷凍劑配套使用，例如，氣泡法和螢光法劑。應避免使用含氯清潔劑，因為氯可能與冷凍劑發生反應并腐蝕銅管件。
  - 如果懷疑存在洩漏，則應消除/熄滅所有明火。
  - 如果發現需要焊接的冷凍劑洩漏，則應從系統中排放所有冷凍劑或在系統中遠離洩漏的部分進行隔離（藉助關閉閥）。排放冷凍劑時必須遵循第 #7 部份中的注意事項。

7. 排放和抽空

- 當介入冷凍劑迴路進行維修時或進行任何其他操作時，應遵循常規充填步驟。
  而且，遵循最佳作業規範至關重要，因為可燃性是一個考慮因素。
  應遵照以下步驟：

  • 排放冷凍劑 -> • 利用惰性氣體淨化迴路 -> • 抽空 -> • 利用惰性氣體淨化迴路 -> • 通過切割或焊接打開迴路

- 應將所充填的冷凍劑回收至適當的回收鋼瓶中。
- 應使用無氧氮排除系統內的空氣，保持空氣調節機安全。(備註：OFN = 無氧氮，惰性氣體的類型)
- 此過程可能需要重複幾次。
- 此項任務不得使用壓縮空氣或氧。
- 應使用無氧氮破壞系統內的真空并繼續充填直至達到工作壓力，然後排放至大氣中，再抽氣至真空，以此來完成空氣排除。
- 應重複此過程，直至系統內不存在任何冷凍劑。
- 當最後進行無氧氮充填時，應將系統泄壓至大氣壓力，確保工作得以進行。
- 此操作極其重要，以確保管件上之焊接作業得以進行。
- 確保真空泵出風口不靠近任何潛在點火源，并確保通風良好。

8. 充填步驟

- 除常規充填步驟外，應遵循以下要求。
  - 使用充填設備時，確保不會出現不同冷凍劑的污染物。
  - 導管或管道應盡可能短，以將管道中所包含之冷凍劑的數量減至最小。
  - 應依照使用說明書將鋼瓶存放於適當位置。
  - 為系統充填冷凍劑之前，應确保製冷系統正確接地。
  - 充填完成時，請為系统添加標籤（若无標籤）。
  - 應务必小心不要過度充填製冷系統。
- 再充填系统之前，應使用無氧氮測試系統之壓力 (參閱第 7 部分)。
- 充填完成時，應在試運轉之前進行漏氣檢查。
- 離開安裝地點之前應進行後續漏氣檢查。
- 充填和排放冷凍劑時，靜電荷可能積累并構成危險情況。
  在充填/排放之前，應使容器和設備安全接地，在輸送過程中消除靜電，以避免火災或爆炸。

9. 停用

- 執行此程式之前，技術人員須十分熟悉本設備及其全部詳情。
- 建議遵循良好作業規範，所有冷凍劑均應安全回收。
- 在執行此項任務之前，應提取冷凍機油和冷凍劑樣本，以防再用所回收的冷凍劑之前需要進行分析。
- 開始此項任務之前須確保電力供應正常。
  a) 熟悉本設備及其操作。
  b) 確保系統電氣絕緣。
  c) 嘗試此程式之前應確保：
     - 必要時，備有可供使用的搬置裝備，用於搬運冷凍劑鋼瓶；
     - 備有所有個人防護設備并應正確使用；
     - 回收過程始終要在勝任人員的監督之下；
     - 回收設備和鋼瓶符合適當的標準。
  d) 如有可能，為冷凍劑系統抽真空。
  e) 若無法抽成真空，則製作歧管，便於從系統的各個部分排放冷凍劑。
  f) 在進行回收之前，應確保鋼瓶位於磅秤上。
  g) 啟動回收機并依照說明書進行操作。
  h) 切勿過度充填鋼瓶。 (液體充填不超過容積的 80%)。
  i) 切勿超過鋼瓶的最大工作壓力，暫時超過亦不容許。
  j) 當正確充填鋼瓶並且完成該過程時，確保立即從安裝地點拆除鋼瓶和設備并關閉設備上的所有隔離活門。
  k) 除非經過清潔和檢驗，否則不得將所回收的冷凍劑充填入另一個製冷系統。
- 充填或排放冷凍劑時，靜電荷可能積累并構成危險情況。
  在充填/排放之前，應使容器和設備安全接地，在輸送過程中消除靜電，以避免火災或爆炸。

10. 添加標籤

- 應為設備添加標籤，說明設備已經停用並且冷凍劑已排空。
- 標籤應當注明日期并簽名。
- 確保設備上貼有標籤，注明設備包含可燃性冷凍劑。

11. 回收

- 當出於檢修或停用設備之目的從系統排放冷凍劑時，建議遵循良好作業規範，所有冷凍劑均應安全排放。
- 當將冷凍劑輸送至鋼瓶中時，應確保只使用適當的冷凍劑回收鋼瓶。
- 應確保備有適當數量的鋼瓶，便於容納整個系統內充填的冷凍劑。
- 待使用之所有鋼瓶被指定用於所回收的冷凍劑并為該冷凍劑加貼標籤（即，用於冷凍劑回收的特殊鋼瓶）。
- 鋼瓶應配有處於正常狀態的洩壓閥和相關關閉閥。
- 為回收鋼瓶抽真空，如有可能，在進行回收之前冷卻回收鋼瓶。
- 回收設備應處於正常狀態，并隨附關於該設備的一系列說明，回收設備還應適合於回收可燃性冷凍劑。
- 此外，應備有一臺經過校準且處於正常狀態的磅秤。
- 導管應配有無洩漏快速接頭且處於良好狀態。
- 使用回收機之前，應檢查回收機是否處於正常狀態、已進行正常維護並且任何關聯的電氣部件皆已密封，以防冷凍劑洩漏時發生引燃。
  如有疑問，請諮詢製造商。
- 應使用正確的回收鋼瓶將所回收的冷凍劑退還至冷凍劑供應商處，并提供相關廢棄物轉移說明。
- 切勿在回收裝置中混合冷凍劑，尤其不要在鋼瓶中混合冷凍劑。
- 如欲拆卸壓縮機或排放壓縮機油，應確保將其排放至可接收水準，確保潤滑油中不含可燃性冷凍劑。
- 將壓縮機退還至供應商處之前，應執行抽空過程。
- 僅應對壓縮機機體進行電熱，以加速此過程。
- 當從系統中排放壓縮機油時，應安全進行。

安裝時所需的工具

1	菲力螺絲起子	6	剪管器	11	溫度計	16	扭力扳手 18 N•m (1.8 kgf•m) 42 N•m (4.3 kgf•m) 55 N•m (5.6 kgf•m) 65 N•m (6.6 kgf•m) 100 N•m (10.2 kgf•m)
2	水平儀	7	擴孔器	12	高阻表		
3	電鑽，空心鑽 (直徑 ø70 mm)	8	刀	13	萬用電表		
4	六角扳手 (4 mm)	9	漏氣偵查器	14	真空泵		
5	扳手	10	帶尺	15	量規歧管		

附送之配件

編號	附件	數量
1	安裝板	1
2	安裝板固定螺絲	5
3	遙控器	1
4	電池	2
5	遙控器支架	1
6	遙控器支架固定螺絲	2
7	排水彎管	1

適用的導管套件	配管尺寸	
	氣體	液體
CZ-3F5, 7BP	9.52 mm (3/8")	6.35 mm (1/4")
CZ-4F5, 7, 10BP	12.7 mm (1/2")	6.35 mm (1/4")
CZ-52F5, 7, 10BP	15.88 mm (5/8")	6.35 mm (1/4")

選擇最佳位置

室內機	室外機
❏ 切勿將機組安裝到油煙過多的區域，如：廚房、車間等。 ❏ 機組附近應沒有任何熱源和蒸氣。 ❏ 不應有任何阻擋空氣流通的障礙物。 ❏ 最好安裝于空氣流通的地方。 ❏ 最好安裝于可輕鬆完成排水的地方。 ❏ 最好安裝于有將防噪考慮在內的地方。 ❏ 切勿將機組安裝在靠近門道的地方。 ❏ 確保箭頭所示之部位離開牆壁、天花板、籬笆或其他阻礙物一段距離。 ❏ 本空調機室內機最低安裝高度應為 1.8 m。	❏ 如果造一個天棚保護室外機組以防止陽光直射或雨淋時，則應注意冷凝器的散熱不受阻礙。 ❏ 安裝場所不要飼養動物和種植花木，因為排出的熱氣對它們有影響。 ❏ 確保箭頭所示之部位離開牆壁、天花板、籬笆或其他阻礙物一段距離。 ❏ 不要置放可能會導致散熱空氣受阻的任何障礙物。 ❏ 若導管長度超過 [附加氣體的導管長度]，則必須如 (表 A) 所示添加額外的冷凍劑。

表 A

型號	容量 W (HP)	配管尺寸		標準長度 (m)	最大高度 (m)	最小管子長度 (m)	最大管子長度 (m)	補充冷凍劑 (g/m)	附加氣體所需的導管長度 (m)	最大冷凍劑充填量 (kg)	A_{min} (m²)
		氣體	液體								
YU9***	1.0HP	9.52 mm (3/8")	6.35 mm (1/4")	5	15	3	20	10	7.5	0.58	不適用 (*)
YU12***	1.5HP				15	3	20	10	7.5	0.60	不適用 (*)

舉例：針對 YU9***
若機組的安裝距離是 10 m，額外冷凍劑的數量應該是
=> 10 m（距離）-7.5 m（附加氣體的導管長度）
=> 2.5 m
=> 2.5 m x 10 g/m（附加冷凍劑） => 25 g

(*) => 總冷凍劑充填量 m_c 低於 1.84 kg 的系統不受任何房間面積要求限制。

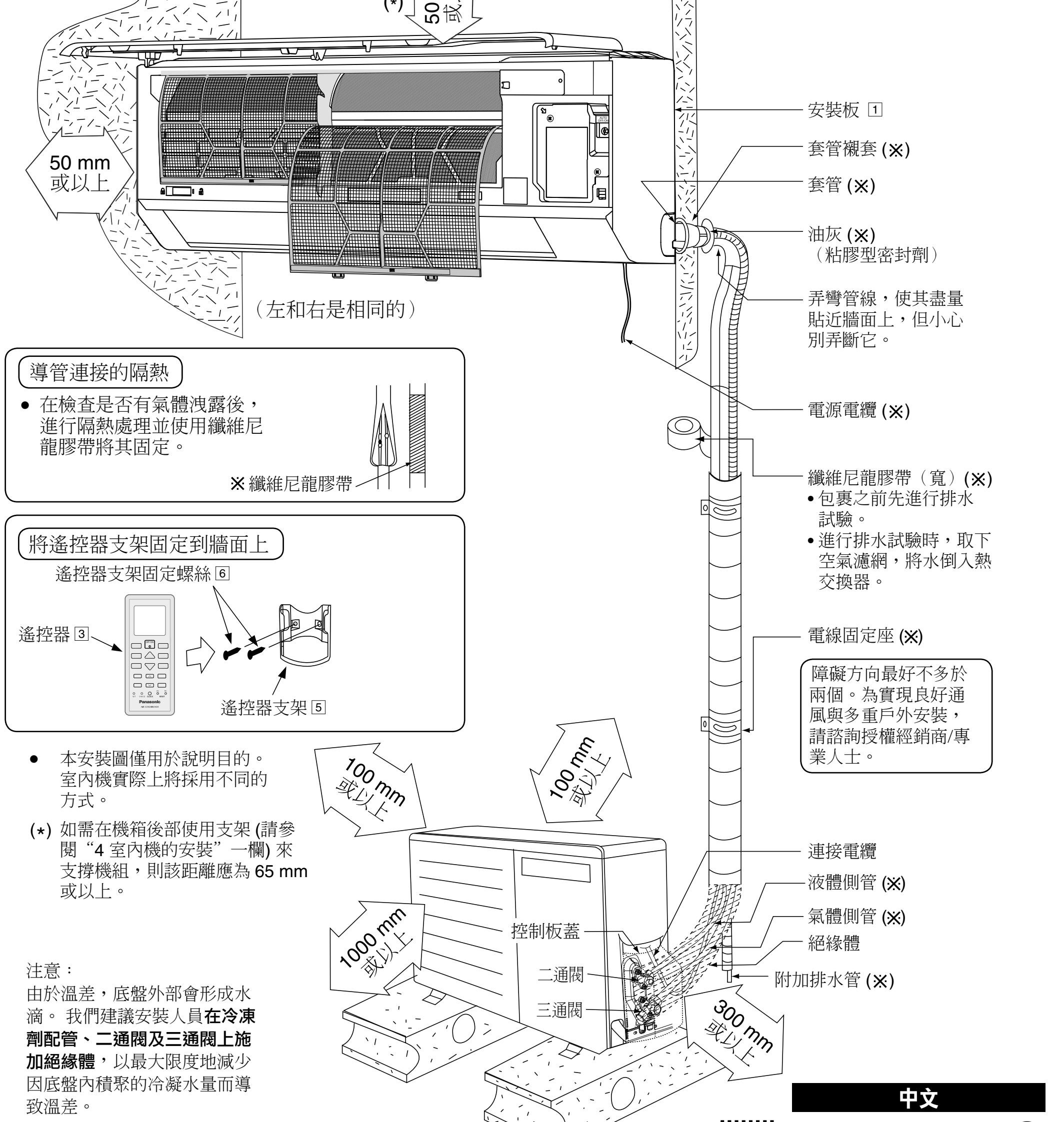
$A_{min} = (m_c / (2.5 \times (LFL)^{(5/4)} \times h_0))^2$ ** 不小於安全係數

A_{min} = 所需最小房間面積 (m²)
m_c = 設備內冷凍劑充填量 (kg)
LFL = 燃燒下限 (0.307 kg/m³)
h_0 = 設備的安裝高度：(壁掛式 1.8 m)
SF = 安全係數值 0.75

** 所需最小房間面積，A_{min} 還應遵循下方的安全係數公式：

$A_{min} = m_c / (SF \times LFL \times h_0)$ 確定房間面積時應取較大值。

室內/室外裝機圖



- 本安裝圖僅用於說明目的。室內機實際上將採用不同的方式。

(*) 如需在機箱後部使用支架 (請參閱“4 室內機的安裝”一欄) 來支撐機組，則該距離應為 65 mm 或以上。

注意：
由於溫差，底盤外部會形成水滴。 我們建議安裝人員**在冷凍劑配管、二通閥及三通閥上施加絕緣體**，以最大限度地減少因底盤內積聚的冷凝水量而導致溫差。

中文

ACXF60-57260 (1/2)

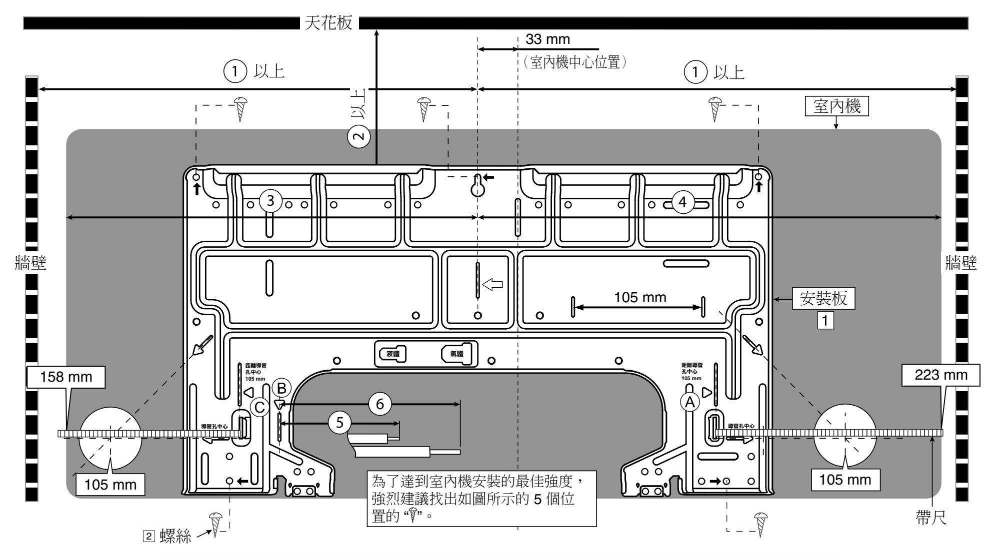
在馬來西亞印刷

室
內
機

1 選擇最佳位置（請參閱“選擇最佳位置”）

2 如何固定安裝板

安裝壁應足夠堅硬和牢固，以防止機組震動。



尺寸					
①	②	③	④	⑤	⑥
465 mm	68 mm (*)	350 mm	415 mm	71 mm	120 mm

- 安裝板的中心點到左及右邊牆壁的距離應大於 ①。
- 從安裝板邊緣到天花板的距離應大於 ②。
- 從安裝板中心到本機的左側為 ③。
- 從安裝板中心到本機的右側為 ④。

尺寸 ❷

(*) :-
如要使用機箱後部的支架（請參閱“4 室內機的安裝”一欄）來支撐機組，則該距離應為 83 mm 或以上。

Ⓑ
- 至於左邊導管，從這條線起至液體導管連接的距離應約為 ⑤。
- 至於左邊導管，從這條線起至氣體導管連接的距離應約為 ⑥。
- 亦可參照安裝板上的標記連接液體導管及氣體導管。

1. 用 5 枚或以上的螺絲 (至少 5 枚螺絲)，將安裝板安裝到壁面上。
   （如果將機組安裝到混凝土牆面上，可考慮使用錨定螺栓。）
   - 務必使用水平儀及細線標記一道劃線，並通過對準該道劃線，以水平方向裝上安裝板。
2. 用 ø70 mm 的空心鑽鑽管道孔。
   - 將安裝板的左側和右側形成一條線。延長線的交匯點是孔的中心。另一個方法是將卷尺放在上圖所示的位置。洞孔的左右兩側距離測量為 105 mm 時即可取得洞孔的中心點。
   - 右側或左側鑽一個導管孔，該孔應稍微向室外側傾斜。

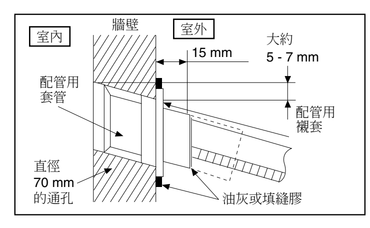
3 在牆上鑽孔及安裝導管套管

1. 將導管套管插入孔中。
2. 為套管裝上襯套。
3. 切斷套管，讓牆外側留下約 15 mm 長的套管。

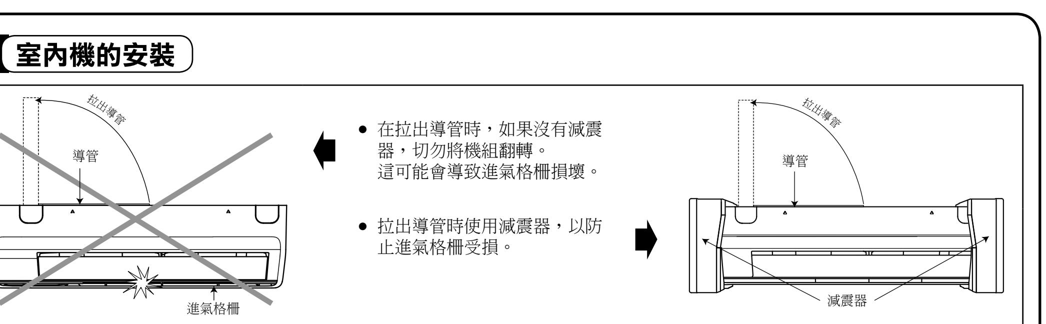
⚠ 注意

❗ 當牆壁為空心結構時，務請使用配管用套管，以防止老鼠咬壞連接電纜而導致的危險。

4. 最後，用油灰或填縫膠封住套管。



4 室內機的安裝



- 在拉出導管時，如果沒有減震器，切勿將機組翻轉。
  這可能會導致進氣格柵損壞。
- 拉出導管時使用減震器，以防止進氣格柵受損。

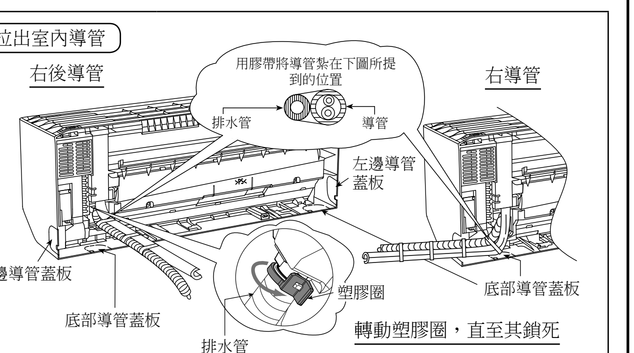
1. 右後導管的安裝

步驟 1	拉出室內導管
步驟 2	安裝室內機
步驟 3	固定室內機 • 若使用室內電源連接，過長的電源電纜必須相應地佈置，請在固定室內機前參閱“電源電纜整理”。
步驟 4	插入連接電纜

2. 右邊和右下部導管的安裝

步驟 1	拉出室內導管
步驟 2	安裝室內機
步驟 3	插入連接電纜
步驟 4	固定室內機 • 若使用室內電源連接，過長的電源電纜必須相應地佈置，請在固定室內機前參閱“電源電纜整理”。

拉出室內導管

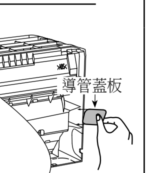


安裝室內機

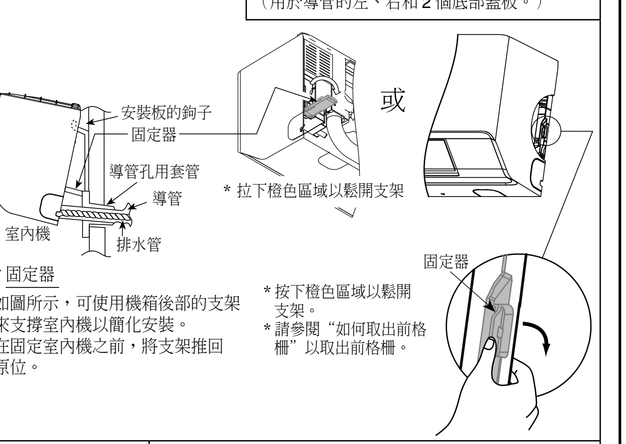
將室內機鉤在安裝板的上部。
（將室內機與安裝板上緣嵌合）。
將鉤子左右移動，確保它正確固定在安裝板上。

如何保存蓋板

如果蓋板被切斷，請將蓋板保存在圖中所示的機箱後部，供日後重新安裝使用。



（用於導管的左、右和 2 個底部蓋板。）



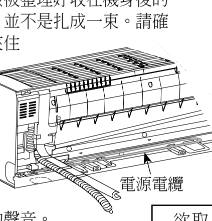
* 固定器

如圖所示，可使用機箱後部的支架來支撐室內機以簡化安裝。
在固定室內機之前，將支架推回原位。

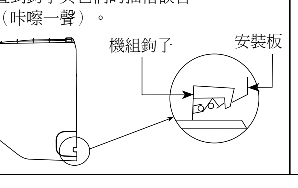
* 按下橙色區域以鬆開支架。
* 請參閱“如何取出前格柵”以取出前格柵。

固定室內機

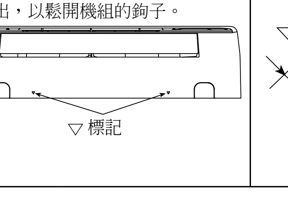
1. 電源電纜整理
   多餘的電源電纜應該被整理好收在機身後的導管上，如圖所示，並不是扎成一束。請確保電源電纜沒有被夾住於主機的掛鉤 (2 個位置) 和安裝板之間。確定電源電纜沒有在機身和安裝板之間被拉緊。
   這可能會產生刺耳的聲音。



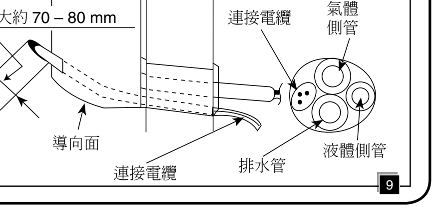
2. 將機組的左下側和右側推向安裝板，直到鉤子與它們的插槽嵌合（咔嚓一聲）。



欲取出機組，請按下機組底的 ▽ 標記，並朝自己方向稍微拉出，以鬆開機組的鉤子。



插入連接電纜



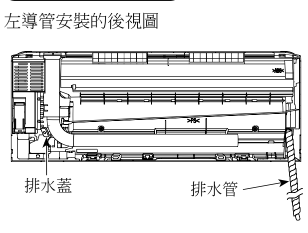
3. 嵌入式配管的處理

步驟 1	更改排水管的位置
步驟 2	將嵌入式導管弄彎 • 使用彈簧彎管或類似的物體將導管弄彎，以避免導管被壓壞。
步驟 3	引導連接電纜進入室內機 • 室內和室外機連接電纜可以在不拆除前格柵的情況下進行連接。
步驟 4	切割和擴大嵌入式導管 • 在確定導管尺寸時，將機組滑至安裝板的最左邊。 • 請參閱“切割和擴大導管”一欄。
步驟 5	安裝室內機
步驟 6	連接管子 • 請參閱室外機章節的“連接管子”。(連接室外導管和証實氣體並無泄漏後才執行以下的步驟。)
步驟 7	為導管進行隔熱及成型處理 • 請參閱室內/室外機安裝章節的“導管連接的隔熱”。
步驟 8	固定室內機

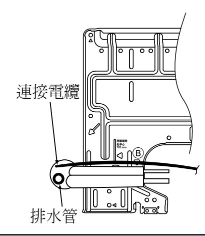
（這還可用於左後導管。）

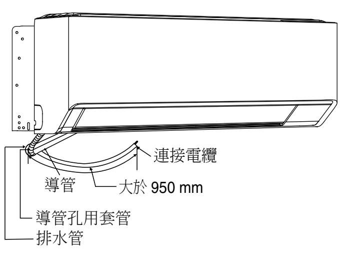
更改排水管的位置

左導管安裝的後視圖

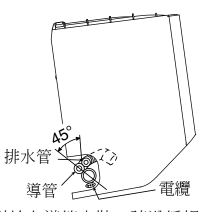


稍微向下調整導管。



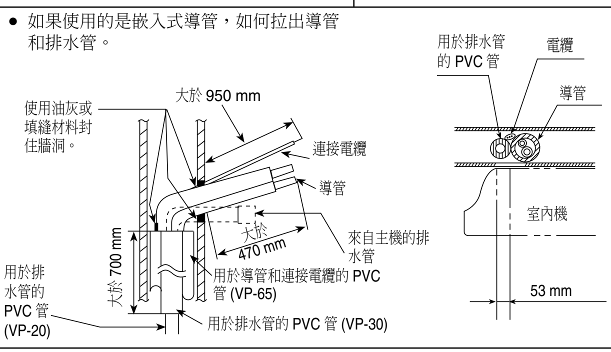


- 如果是左導管安裝，如何插入連接電纜和排水管。



（對於右導管安裝，請遵循相同的程序）

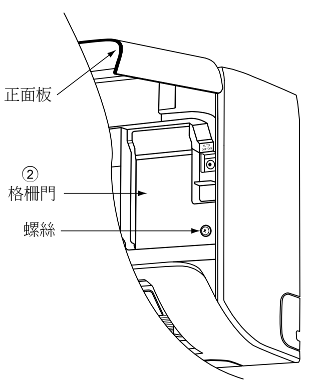
- 如果使用的是嵌入式導管，如何拉出導管和排水管。



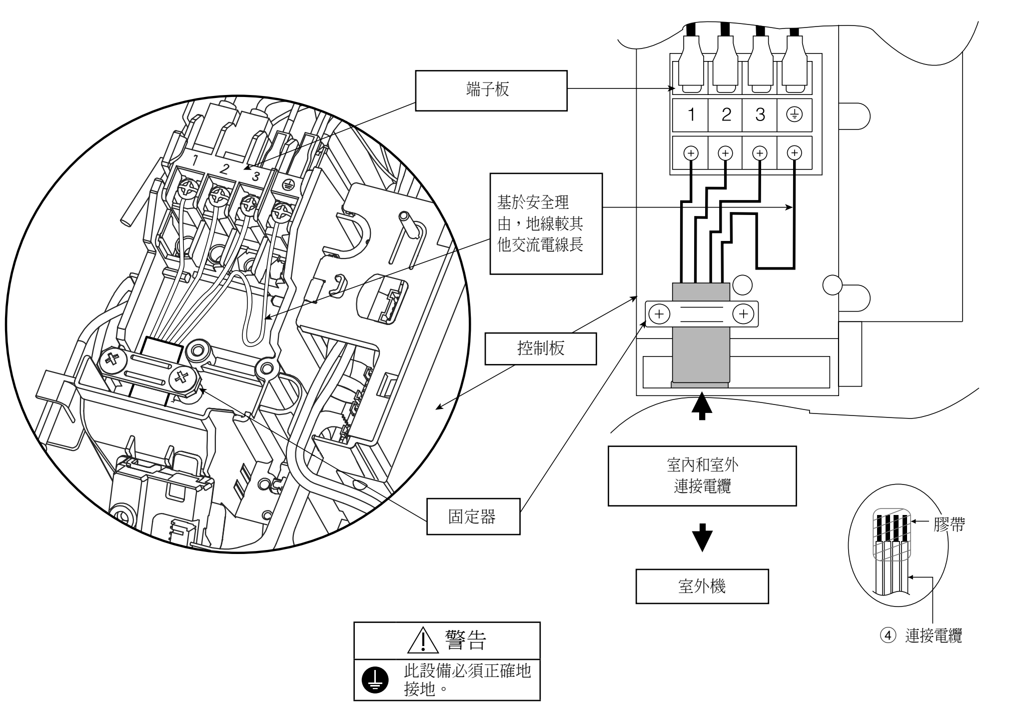
5 將電纜連接至室內機

室內和室外機連接電纜可以在不拆除前格柵的情況下進行連接。

① 將室內機安裝在裝在牆壁上的安裝支架。
② 鬆開螺絲然後打開前面板和格柵門。
③ 室內和室外的**連接電纜**應採用被核准的聚氯丁二烯鎧裝。4 x 1.5 mm² 軟線，類型標明為 60245 IEC 57 或更重的電纜。
切勿使用接駁連接電纜。若現有 (隱藏配線或其它) 電纜太短，請更換之。
應遵循有關電氣工作的國家法規和法律。
④ 用膠帶綁起所有室內機和室外機的**連接電纜**，並將連接電纜繞至左邊出口。
⑤ 如下圖所示，移除膠帶及連接室內機和室外機之間的連接電纜。



室內機組上的端子	1	2	3	⏚
電線的顏色（連接電纜）				
室外機組上的端子	1	2	3	⏚



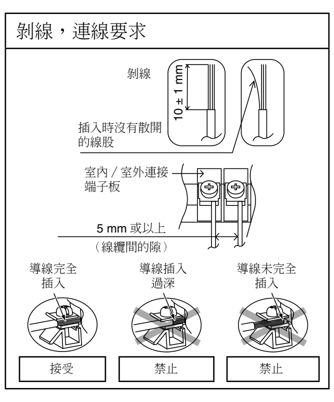
⚠ 警告

此設備必須正確地接地。

⑥ 用固緊件把連接電纜牢牢地固定在控制板上。
請勿過度擰緊固定器固定螺絲，否則可能會損壞固定器。
⑦ 關上格柵門，鎖緊螺絲然後關上前面板。

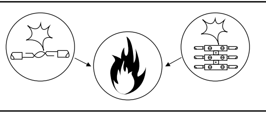
備註：
- 絕緣裝置（用作切斷電源）必須有至少 3.0 mm 的接觸間隙。
- 確保室外機及端子的電線顏色數量與室內的相同。
- 為電氣安全起見，地線的顏色應該如圖所示是黃色/綠色 (Y/G) 和比其他交流電線長，以防電線拖力其固定位置。

剝線，連線要求

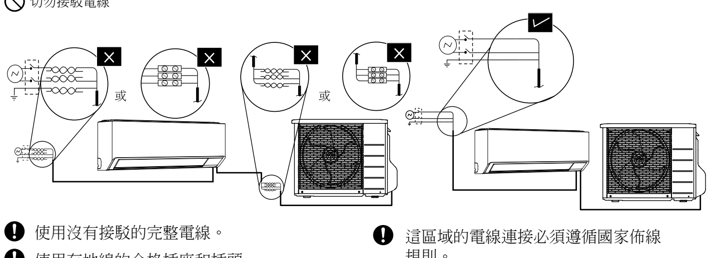


⚠ 警告

火災風險
接駁電線可能會導致過熱和火災。



⃠ 切勿接駁電線



❗ 使用沒有接駁的完整電線。
❗ 使用有地線的合格插座和插頭。
❗ 這區域的電線連接必須遵循國家佈線規則。

室
外
機

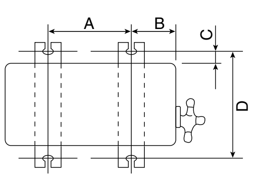
1 選擇最佳位置（請參閱“選擇最佳位置”）

2 裝置室外機

- 選定最佳位置後，依照室內/室外機安裝圖進行安裝。

① 用螺栓 (ø10 mm 直徑) 將室外機穩實打橫地裝在牆上或框上。
確保機組安裝在平衡面，確保水從機組排水孔流出。
② 若裝在屋頂，請考慮到強風和地震。
請用螺栓、螺絲或釘把安裝框架裝穩。

型號	A	B	C	D
1.0HP	474 mm	87 mm	18.5 mm	261 mm
1.5HP	570 mm	105 mm	18.5 mm	320 mm

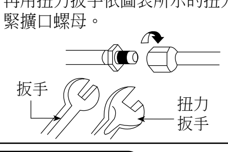


3 連接管子

連接配管至室內

所有型號的連接接頭

在插入（在室內管子的連接部份）在銅管上後，請擴大管口。
(若需用較長的管子)
連接管子
- 對準管子的中心，用手指用力擰緊連接螺母。
- 再用扭力扳手依圖表所示的扭力鎖緊擴口螺母。

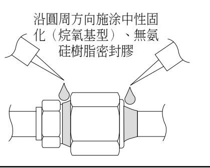


R32 型號在室內側以擴口方式進行連接時的其他注意事項

❗ 確保在連接到機台前做管道的重新燃燒，以避免洩漏

使用中性固化（烷氧基型）、無氨硅樹脂密封膠和隔熱材料充分密封擴口螺母（氣體和液體側管），以免因凍結而造成氣體洩漏。

完成壓力測試并根據密封膠使用說明進行清潔之後才能將中性固化（烷氧基型）、無氨硅樹脂密封膠施涂于連接處的外側。
目的在於避免水分進入連接接頭，進而可能發生凍結。
密封膠固化將需要一段時間。
包裹隔熱材料時應確保密封膠不會剝落。



連接配管至室外

請決定配管長度，然後用配管剪管器切除。去除切割邊緣的毛刺。
把擴口螺母(位於閥門)套在銅管上之後，請擴大管口。
將配管中央部位與閥門對齊，然後用扭力扳手按照以上桌表所指定的轉矩旋緊。

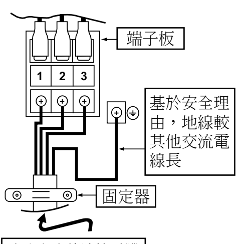
⃠ 切勿鎖太緊，否則可能會導致漏氣。	
配管尺寸	轉矩
6.35 mm (1/4")	[18 N•m (1.8 kgf•m)]
9.52 mm (3/8")	[42 N•m (4.3 kgf•m)]
12.7 mm (1/2")	[55 N•m (5.6 kgf•m)]
15.88 mm (5/8")	[65 N•m (6.6 kgf•m)]
19.05 mm (3/4")	[100 N•m (10.2 kgf•m)]

下一步 編號.4

5 將電線連接至室外機

① 旋松螺絲釘以取下控制板蓋。
② 室內和室外的**連接電纜**應採用合格的 4 x 1.5 mm² 聚氯丁稀鎧裝電線 (編號 60245 IEC 57)，或負荷更高的電線。切勿使用接駁連接電纜。
若現有 (隱藏配線或其它) 電纜太短，請更換之。
應遵循有關電氣工作的國家法規和法律。

室外機組上的端子	1	2	3	⏚
電線的顏色				
室內機組上的端子	1	2	3	⏚



⚠ 警告

此設備必須正確地接地。

③ 用固緊件 (夾扣) 把電纜牢牢地固定在控制板上。
④ 以螺絲釘將控制板蓋安裝回原來的位置。
⑤ 欲瞭解剝線和連線要求，請參閱室內機的說明 ⑤。
- 基於安全理由，地線應該是黃色/綠色 (Y/G) 以及較其他交流電線長。

6 喉管絕緣

1. 請如室內/室外機安裝圖所示在配管連接部分進行絕緣。
   請將已絕緣的管子末端包扎好，以防止水流進管子內。
2. 如果排水管或連接配管位于室內（露滴將形成），請使用厚度至少 6 mm 或以上的聚乙烯泡沫增加絕緣。

此空氣淨化方式禁止使用於 R32 系統

4 製冷系統氣密測試

⃠ 切勿使用冷凍劑排除系統內的空氣，而應使用真空泵為裝置抽真空。

❗ 室外機內不存在額外冷凍劑用於排除空氣。

- 在為系統充填冷凍劑之前以及製冷系統投入工作之前，應由經認證的技術人員和/或安裝工對下方現場測試程式和驗收準則予以核實。
- 請務必檢查整個系統是否存在氣體洩漏。

準備工作 (步驟 1-2)

1) 使用推針將裝載導管連接至裝載裝置的低壓部分以及三向閥的維修端口。在極端寒冷的冬季，可能會發生材料收縮，請嘗試進一步擰緊雙向和三向閥，以確保它們完全關閉。
2) 正確緊固安裝壓力錶歧管套件。確保歧管式壓力錶的兩個閥門（低壓和高壓）均處於關閉位置。

抽空 (步驟 3-4)

3) 將歧管式壓力錶的中央導管連接至真空泵。
4) 啟動真空泵的電源開關，然後打開歧管式壓力錶低側閥門並確定壓力錶的指針由 0 cmHg (0 MPa) 跳至 –76 cmHg (–0.1 MPa) 或抽真空至 500 微米。此過程持續約十分鐘。
然後關閉歧管式壓力錶低側閥門。

使用惰性氣體進行氣密測試 (步驟 5-7)

5) 從中央導管上拆下真空泵并將中央導管與任何適用作為測試氣體的惰性氣體鋼瓶相連。
6) 為系統充填測試氣體并等待系統內的壓力達到 1.04 MPa (10.4 bar)。
7) 等待并監測壓力錶上的壓力讀數。檢查是否存在壓降。等待時間取決於系統尺寸。

壓降？(步驟 8) — 是 → 洩漏偵測和維修 (步驟 9-12)；無 ↓

8) 若存在壓降，請執行步驟 9-12。若不存在壓降，請執行步驟 13。

9) 使用漏氣偵測器檢查是否存在洩漏。須使用具有每年 5 克測試氣體或更好靈敏度的洩漏偵測設備。
10) 沿著空氣調節器系統移動探針，檢查是否存在洩漏，并予以標記，方便維修。
11) 應對所偵測和標記的任何洩漏予以維修。
12) 維修之後，重複抽空步驟 3-4 以及氣密測試步驟 5-7。
按照步驟 8 檢查是否存在壓降。

回收測試氣體 (步驟 13)

13) 若無洩漏，回收測試氣體。執行抽空步驟 3-4 。
然後繼續步驟 14。

抽空 (步驟 3-4)

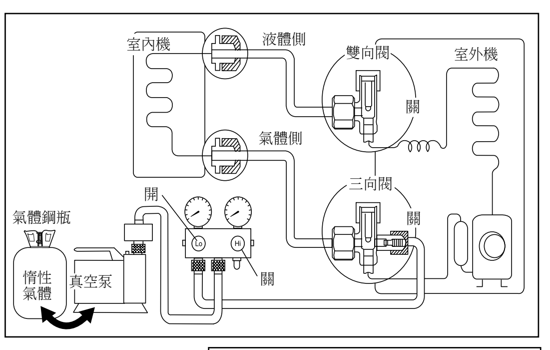
14) 拆除連接至三向閥的維修端口的裝載導管。
15) 使用轉矩扳手施以 18 N•m 的轉矩將三向閥的維修端口蓋子關緊。

打開雙向閥和三向閥 (步驟 14-18)

16) 打開雙向閥和三向閥的閥蓋。
17) 使用六角扳手 (4mm) 打開這兩個閥。
建議讓冷凍劑緩慢流入冷凍劑系統，以防止冷凍劑凍結。稍微打開雙向閥 5 秒鐘，然後關上閥門。重複此操作 3 次，然後完全打開閥門。
18) 將閥蓋安裝回雙向閥和三向閥上，完成此過程。

完成

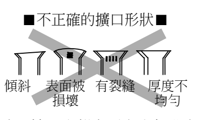
下一步 編號.5



備註： 推薦使用下列任何一種洩漏偵測器,
I) 通用嗅探器測漏器
II) 電子鹵素測漏器
III) 超音波偵漏器

切割和擴大導管

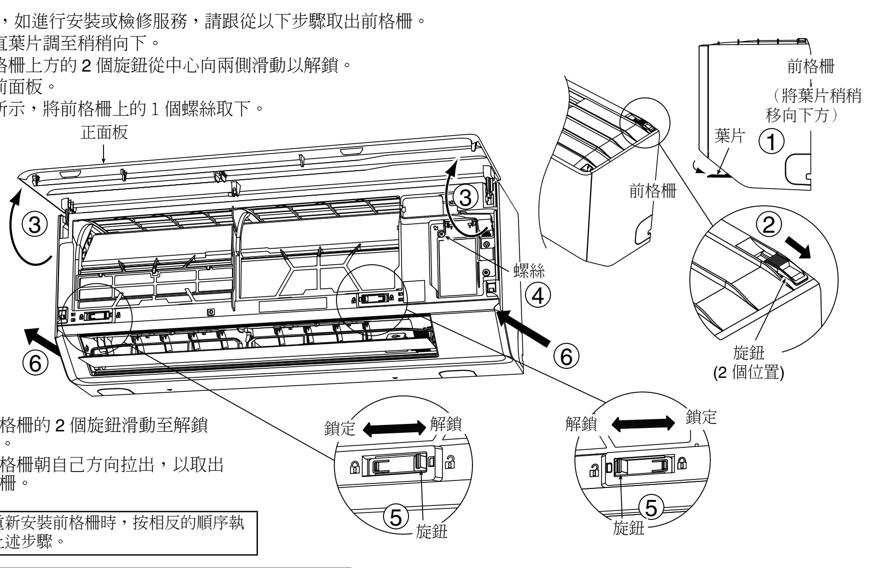
1. 請用切割器切斷和除毛刺。
2. 用擴孔器去除毛刺。若不去除毛刺，氣體可能會泄漏。
   將管末端轉下以防止金屬屑進入管子內。
3. 把擴口螺母套在銅管上之後，請擴大管口。



當擴口正確，擴口內部表面會均勻發光，且厚薄均一。由於擴口部分會接觸到連接，請仔細檢查擴口的成型表面。

如何取出前格柵

若有必要，如進行安裝或檢修服務，請跟從以下步驟取出前格柵。
① 將垂直葉片調至稍稍向下。
② 將前格柵上方的 2 個旋鈕從中心向兩側滑動以解鎖。
③ 打開前面板。
④ 如圖所示，將前格柵上的 1 個螺絲取下。



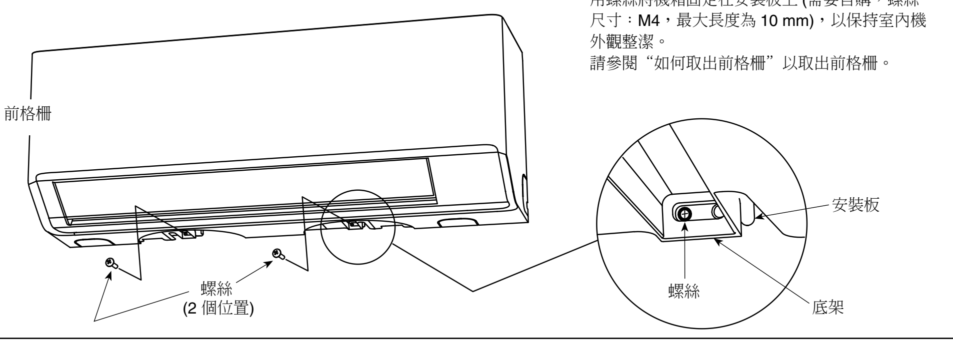
⑤ 將前格柵的 2 個旋鈕滑動至解鎖位置。
⑥ 將前格柵朝自己方向拉出，以取出前格柵。

當重新安裝前格柵時，按相反的順序執行上述步驟。

滑軌移動到鎖止位置後，請將前格柵向身體方向輕輕拉扯，確認前格柵已牢固鎖定。

用螺絲將機箱安裝在安裝板上

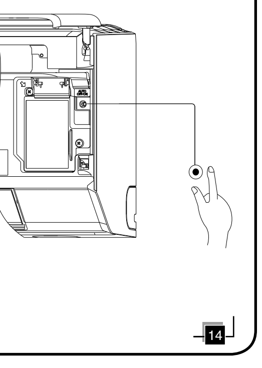
用螺絲將機箱固定在安裝板上 (需要自購，螺絲尺寸：M4，最大長度為 10 mm)，以保持室內機外觀整潔。
請參閱“如何取出前格柵”以取出前格柵。



自動開關操作

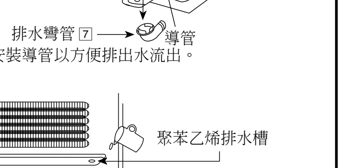
以下操作將通過按“AUTO”開關來執行。

1. 自動操作模式
   一旦按下“自動開關”按鈕并在 5 秒之內鬆開，自動操作將立即生效。
2. 試運轉操作（用於抽氣/檢修目的）
   如果持續按自動按鈕 5 至 8 秒鐘，試運轉操作將被激活。“嗶”聲在第 5 秒時將會響起，以顯示測試已開始操作。
3. 遙控器接收聲的開/關
   遙控器接收聲的開/關可按下列步驟更改：
   a) 持續按“AUTO”按鈕 16 至 21 秒鐘。在第十六秒鐘時會發出“嗶”、“嗶”、“嗶”、“嗶”聲響。
   b) 按下 “AC Reset” 鈕一次，您將會聽到“嗶”聲，表示遙控器接收聲設定模式已被開啟。
   c) 再按“AUTO”按鈕。每次 (在 60 秒的間隔內) 按“AUTO”鈕，
      遙控器的接收聲響狀態將會在開和關之間轉換。
      較長的“嗶”聲表示遙控器的接收聲響設定已被開啟。
      較短的“嗶”聲表示遙控器的接收聲響設定已被關閉。



如何處理室外機排出的水

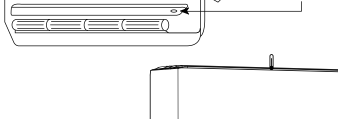
- 若使用排水彎管，本機應該被放置在高過 5 cm 的架子上。
- 若本機使用地點的溫度會連續 2 至 3 天降低至 0°C以下，我們建議您不要使用排水彎管，因排出水將會凝結並導致風扇停止轉動。



以斜角安裝導管以方便排出水流出。

檢查排水

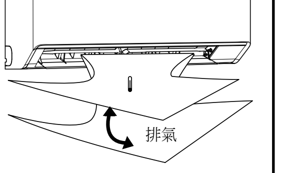
- 打開前面板，然後取下空氣過濾器。
  （排水檢查可在不卸下前格柵的情況下進行。）
- 往排水托盤的發泡膠倒入一杯水。
- 確保水從室內機的排水管流出。



性能評估

- 在製冷/制暖操作模式下運轉機組十五分鐘或更長的時間。
- 測量進氣和排氣溫度。
- 確保進氣和排氣之間的溫差在制冷操作模式下超過 8 °C，而在制暖操作模式下則是超過 14 °C。

備註：
- 在冬季，請在測試運行前打開電源並至少等待 15 分鐘。
  預留足夠的時間預熱冷凍劑並防止判斷錯誤代碼時出錯。



在重新使用現有冷凍劑配管的情況下

□ 當決定重新使用現有冷凍劑配管時，請遵從以下事項。
不良的冷凍劑配管可能導致故障。
- 在下列情況下，請勿迴圈再用任何冷凍劑配管。反之請確保安裝新的配管。
  - 沒有配備熱絕緣於液體側或氣體側配管或兩者。
  - 現有冷凍劑配管處於打開狀況。
  - 現有冷凍劑配管的直徑和厚度不符合要求。
  - 配管長度和標高不符合要求。
  在重新使用配管之前，請進行正確的抽氣。
- 在以下情況下，請在重新使用前徹底清潔。
  - 現有空調器的抽氣操作無法進行。
  - 壓縮機有故障史。
  - 壓縮機油顏色變深。(ASTM 4.0 及以上版本)。
  - 現有空調器是氣體/油熱泵型。
- 請勿迴圈再用擴口以避免漏氣。請確保安裝新的擴口。
- 如果現有冷凍劑配管有被焊接的部分，在被焊接處進行漏氣檢查。
- 更換失效熱絕緣體。
  熱絕緣必需用於液體側和氣體側配管。

正確的抽氣方法

① 在製冷模式下運轉空氣調節器 10 ~ 15 分鐘。

最重要的過程
目的: 使機油和冷凍劑混合在一起。當空氣調節器停止運轉時，它們將處於分離狀態。

② 操作 10 ~ 15 分鐘過後，關閉雙向閥。
3 分鐘過後，關閉三向閥。

混合的冷凍劑和油將被收集到室外機內。

③ 取出空氣調節器機組。

只有極少量的油殘留在導管內，這是可以接受的。

④ 安裝新的冷凍劑空調器。

檢查項目

- [ ] 擴口螺母連接是否有任何氣體洩漏？
- [ ] 擴口螺母連接是否已進行了隔熱處理？
- [ ] 連接電纜是否已穩固地接至端子板？
- [ ] 連接電纜的尾端是否已穩當鉗好？
- [ ] 排水是否良好？（請參閱“檢查排水”章節）
- [ ] 地線是否已連接妥當？
- [ ] 室內機是否正確地鉤到安裝板？
- [ ] 電源電壓是否符合額定值？
- [ ] 是否有任何異聲？
- [ ] 製冷/制暖操作是否正常？
- [ ] 溫控器操作是否正常？
- [ ] 遙控器的 LCD 操作是否正常？

中文

ACXF60-57260 (2/2)
在馬來西亞印刷